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# THE CYTOLOGICAL DIAGNOSIS OF SOLID TUMOURS BY SMALL NEEDLE ASPIRATION AND ITS INFLUENCE ON CANCER CLINIC PRACTICE*

IVAN H. SMITH, M.D.,†
J. H. FISHER, M.D.,
J. S. LOTT, M.D. and
D. H. THOMSON, M.B.,
*London, Ont.*

FOR SOME 20 years the Ontario Cancer Foundation's London Clinic, in conjunction with the Department of Pathology of the University of Western Ontario, has been studying the value of tumour aspirates as interpreted histologically from cut sections. Out of sheer curiosity a supplementary smear from the same material was occasionally made; indeed, at times from necessity when tissue fluid alone was obtained, or when the tumour proved to be cystic, the smear technique was used by itself. Gradually, and in particular since 1954, our curiosity has been replaced by the realization that the cytological interpretation of tumour aspirates has established itself as a most valuable procedure — surpassing and replacing the study of the sectioned aspirate in some instances and equalling it in others. But in our hands it is as yet inferior for certain sites, for example, in the diagnosis of primary malignant tumours of lymph nodes. Reliance is now placed on cytology to the extent that, when an aspiration is performed on an accessible lump, emphasis is placed first on obtaining tissue fluid for cytology, the plug when and if procured forming a very important but secondary component of the procedure.

The authors feel it superfluous to review this subject from its historical and bibliographical aspects. For an excellent coverage of the literature and original contributions, the superb articles of Martin and Ellis (1930),[1] Stewart (1933),[2] Godwin (1956)[3] and Papanicolaou (1958)[4] are both timely and complete. This presentation is not concerned with exfoliative cytology or the cytology of effusions.

The successful interpretation and clinical application of the cytology of solid tumours depends, in a large measure, on four principal factors, without which the patient could be the loser:

1. The experience of the pathologist and clinician.
2. The attitude of acquiring perfection.
3. The challenge of participating in and exploring the cytological diagnostic field to its limit.
4. The clinician's ability and willingness to accept the responsibility for positive, negative, and equivocal reports, in particular the latter two.

## TECHNIQUE

The aspiration set consists of a 50 c.c. Luer-Lok syringe, 20- and 22-gauge needles of various lengths, and freshly prepared slides coated with egg albumin. Actually, a wide assortment of sterile needles varying up to 13-gauge is readily accessible.

The overlying skin is sterilized. If the No. 22 needle is routinely used, no local anæsthetic is required. The tumour is immobilized with the left hand, and the needle is inserted until the tumour or its capsule is engaged. Suction to a maximum is now employed, and the needle is guided through the tumour in two or three directions. Before withdrawing the needle all suction is released, thereby preventing aspiration into the lumen of the syringe. When withdrawn, the tissue fluid within the needle is expressed on to the albuminized slides, two preparations being made. The material is smeared evenly by using the needle and, while the smear is still moist, the slides are immersed in fixative in a Coplin jar. Should a plug or excess tissue be available, it is placed in fixative for histological section. Gentle pressure is applied over the aspirated site to minimize the possibility of extravasation.

## PATHOLOGICAL ASPECTS

The smear is fixed for 15 minutes to one hour in fluid containing 1% glacial acetic acid in 95% ethyl alcohol. After fixation, and while still wet, it is stained with hæmatoxylin and eosin in the usual way; it is then mounted and ready for microscopic examination.

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†From the Ontario Cancer Foundation London Clinic, and the Department of Pathology, Faculty of Medicine, University of Western Ontario, and the Hamilton King Meek Memorial Laboratory, Victoria Hospital, London, Canada.

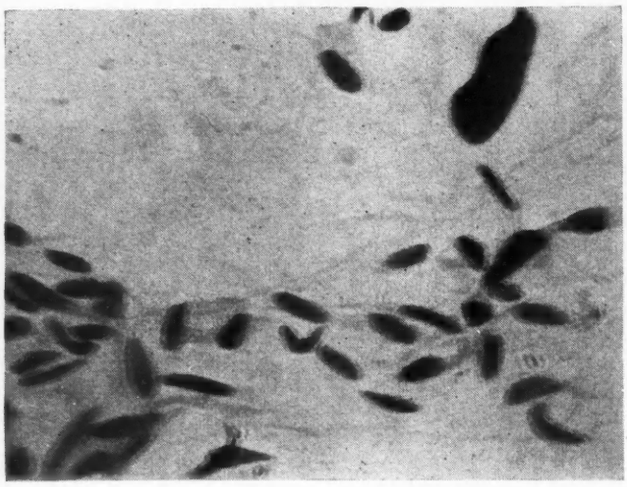

Fig. 1.—Smear of aspirate from pre-auricular lymph node, metastatic melanoma. Large spindle-shaped cells with anaplastic nuclei. Large cell with giant nucleus in right upper corner.

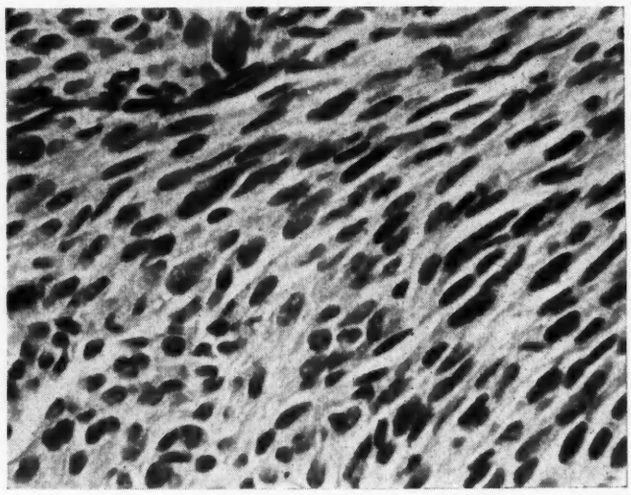

Fig. 2.—Same case as Fig. 1. Paraffin section of plug of tissue obtained by aspiration biopsy. Anaplastic spindle-shaped melanoma cells.

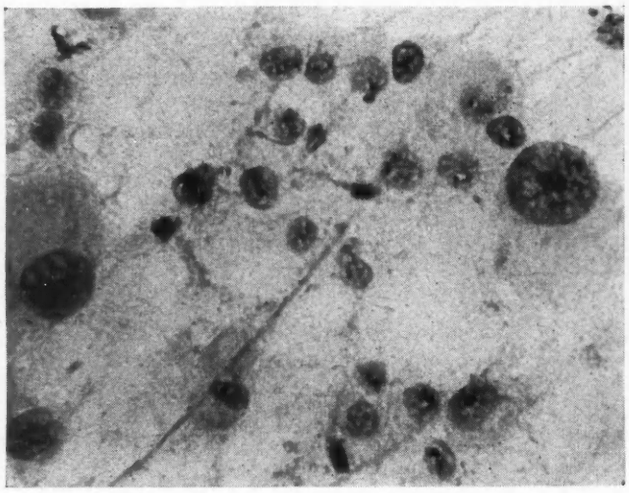

Fig. 3.—Smear of aspirate from cutaneous nodule of metastatic melanoma. Two cells with very large nuclei. Note macronucleolus.

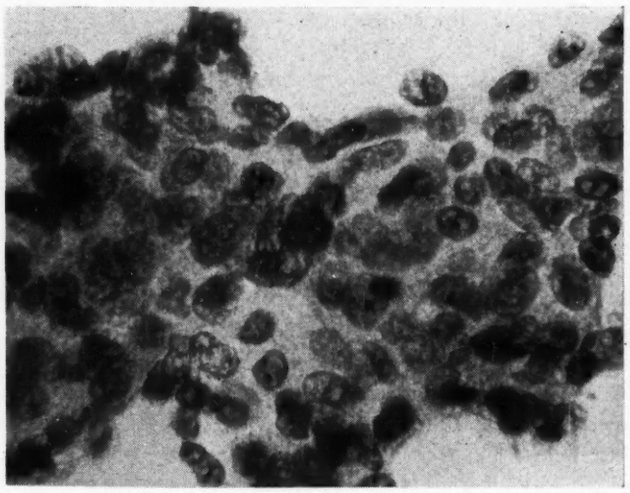

Fig. 4.—Smear of aspirate from breast. Aggregate of malignant polyhedral epithelial cells.

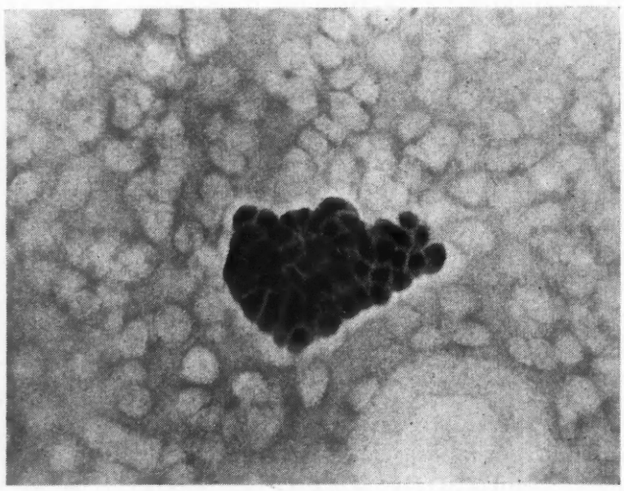

Fig. 5.—Smear of aspirate from breast. Aggregate of well-differentiated malignant epithelial cells.

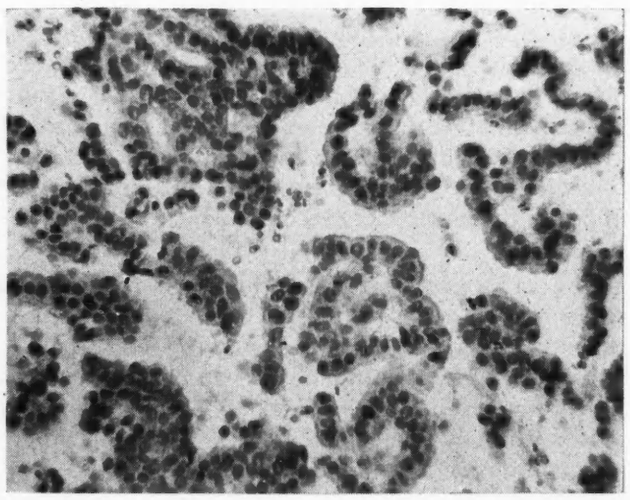

Fig. 6.—Same case as Fig. 5. Paraffin sections of tissue aspirated from axillary lymph node. Well-differentiated malignant glandular epithelium assuming a glandular pattern.

NOTE: (1) All smears and paraffin sections were stained with hæmatoxylin and eosin. (2) All photomicrographs are × 460, except Fig. 6, which is × 230.

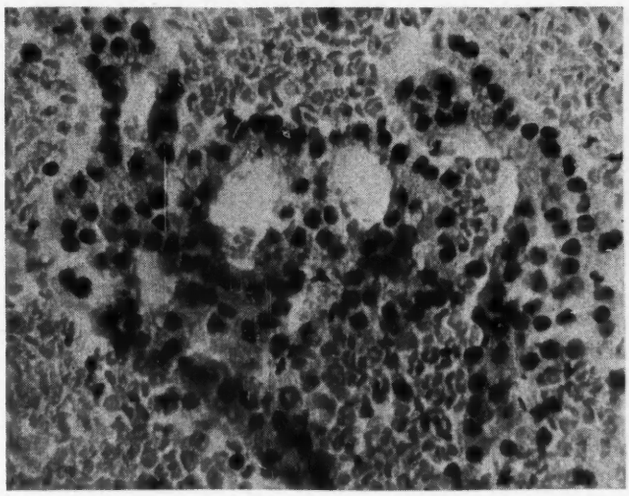

Fig. 7.—Paraffin section of coagulum aspirated from iliac bone, metastatic carcinoma of kidney. Malignant glandular epithelium forming tubular structures.

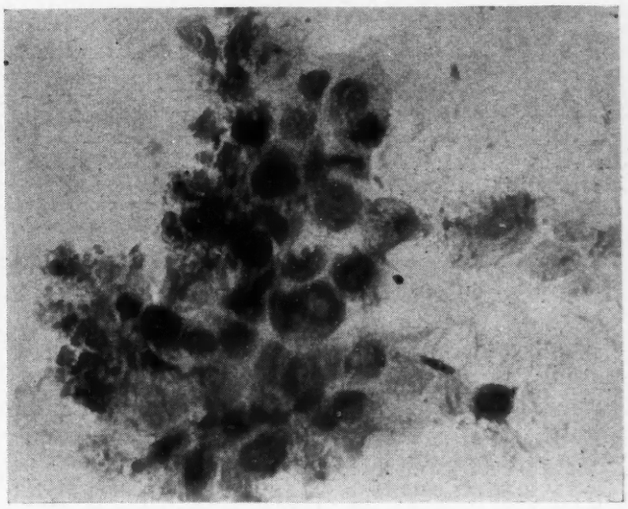

Fig. 8.—Smear of aspirate from lymph node of lower back, metastatic squamous cell bronchogenic carcinoma. Aggregate of anaplastic polyhedral epithelial cells.

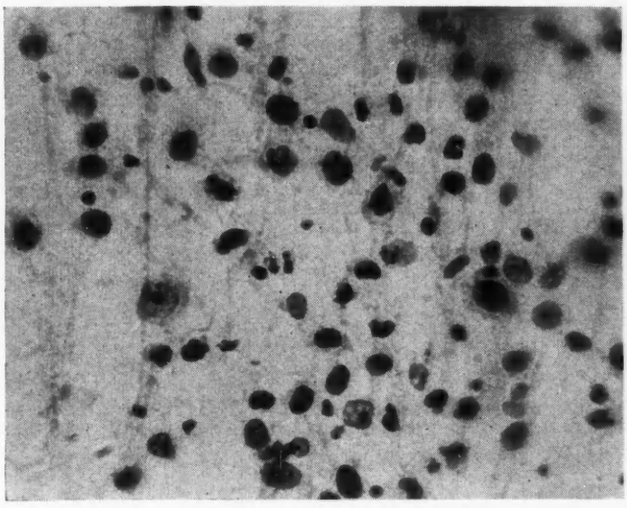

Fig. 9.—Smear of aspirate from cervical lymph node containing lymphocytes and atypical reticulum cells, reticulum cell sarcoma. Reticulum cells are the large pale cells with a vesicular nucleus and a prominent nucleolus.

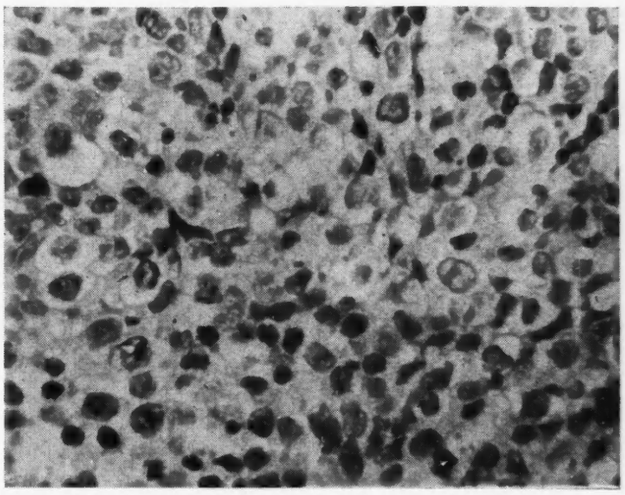

Fig. 10.—Paraffin section of tissue aspirated from cervical lymph node, reticulum cell sarcoma. Sheets of angular cells with a large pale, sometimes indented nucleus, and prominent nucleolus.

*Interpretation and comments.*—If smears are prepared well, properly fixed and stained well, the cytological detail is excellent. In our experience better cytological detail is obtained when smears are fixed while still moist, and stained while still wet after fixation, as in the Papanicolaou technique. If it is not possible to stain immediately after fixation, the smear is flooded with glycerin and covered with a glass slide. This delayed technique gives reasonably satisfactory results but immediate staining is preferable. If the smears are air-dried before fixation, the cells appear somewhat shrunken, the nuclei being smaller and more intensely stained. If the aspirate contains much blood or other protein-rich coagulable fluid, smears are generally unsatisfactory. Under such circumstances the neoplastic cells are embedded in an intensely eosinophilic matrix, and the cytological detail tends to be smudgy and blurred. While Papanicolaou's alcohol-ether fixative is an excellent one, ether has been eliminated from the fixative which we use because it is so volatile. One per cent concentration of glacial acetic acid in 95% ethyl alcohol has been employed because it is a good protein precipitant; it intensifies nuclear staining and has proven satisfactory in our experience.

The pathologist must take a keen interest in this method of diagnosis. He must be willing to learn a type of tissue diagnosis different from the conventional section of embedded tissue. He must become conscious of the importance of fine cytological detail of individual cells. In smear preparations, tissue infiltration and invasiveness, cell arrangement and pattern of growth are lacking. A diagnosis of malignancy must be made on such cytological details of individual cells as nuclear anaplasia, nuclear-cytoplasmic ratio, presence of a macronucleolus, bizarre cells and abnormal mitoses. It is possible to make an accurate diagnosis on exceedingly few cells. This method is time-saving and can be repeated with safety. If necessary, for example, with a patient waiting in the clinic for a diagnosis before starting treatment,

TABLE I.—ASPIRATION SMEAR CYTOLOGY, APRIL 1955 - APRIL 1958

| | *Total cases reviewed* | *Total cytological preparations* |
|---|---|---|
| Malignant | 203 | 291 |
| Benign | 194 | 233 |
| Total | 397 | 524 |

The Ontario Cancer Foundation London Clinic, London, Canada.

a report can be given in as short a time as 30 minutes after aspiration of the lump. Analysis of results, presented elsewhere in this paper, indicates that the method, subject to critical appraisal, is satisfactorily reliable.

As a rule, a diagnosis of metastatic squamous cell carcinoma is established readily in smear preparations. The presence of fragments of keratin, keratinizing atypical squamous epithelium and aggregates of cells showing undoubted malignant characteristics is justification for a diagnosis of malignancy. The smears of aspirates of carcinoma of the breast usually contain many individual cells and aggregates of cells showing readily recognizable characteristics of malignant cells. Smears of some benign lesions of the breast, such as mammary dysplasia, occasionally fibroadenoma, and infrequently duct papilloma, contain surprising amounts of epithelium. The firm cohesion of the cells, sometimes in little strips like a lining, and their uniform, frankly innocent appearance usually indicate their benign nature.

## ANALYSIS OF DATA

In this particular study period from April 1955 to April 1958, aspiration smear cytology was employed in 203 cases of proven cancer, and in 194 cases of benign disease. Table I indicates a total number of 524 cytological preparations.

A breakdown of the benign group is presented in Table II, and it is apparent that lesions of the breast and lymph nodes comprise the bulk of our benign material.

Reference to Table III reveals again that lesions of the breast and lymph nodes were major problems in this malignant series. From 100 cases of primary or recurrent breast cancer, 150 cytological preparations were made, 109 of which were positive or probably positive for cancer cells. In 90 cases, both of primary and metastatic lesions of lymph nodes, 118 smears were studied of which 90 were positive or probably positive. "Probably positive" was not regarded as proof positive of the presence of cancer, and aspiration was generally repeated. From the last column it is noted that of 291 cytological preparations in proven cancer, 216 (75%) confirmed the diagnosis and 75 (25%) were negative. We do not regard these 75 smears as true false-negatives, since a repeat smear confirmed the diagnosis of malignancy in most instances.

TABLE II.—ASPIRATION SMEAR CYTOLOGY, BENIGN CONDITIONS

| | *Breast benign cystic disease* | *Breast fibroadenoma* | *Breast inflammatory disease* | *Lymph-adenitis* | *Parotid (benign)* | *Thyroid disease* | *Miscellaneous benign conditions* | *Total* |
|---|---|---|---|---|---|---|---|---|
| Number of cases examined | 91 | 17 | 14 | 34 | 8 | 13 | 17 | 194 |
| Number of cytological preparations examined | 109 | 19 | 17 | 39 | 9 | 17 | 23 | 233 |

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Experience with carcinoma of the breast is summarized in Table IV. In 92 of the 100 cases of both primary and recurrent cancer of breast, confirmation of the histological diagnosis was obtained by the cytological method. It is also revealed that in 16 cases, or 18%, more than one aspiration was required to establish a confirmatory diagnosis. In comparison with published data for the same site, using histological data in addition,[3] this percentage of negative smears could be anticipated, in that material was aspirated by operators varying in experience. It is our impression that accuracy of diagnosis increases as the operator gains expe-

TABLE III.—ASPIRATION SMEAR CYTOLOGY, MALIGNANT DISEASE

| *Cytologic diagnosis* | *Breast, primary (80 cases) No. smears* | *Breast, recurrent (20 cases) No. smears* | *Lymph node primary (20 cases) No. smears* | *Lymph node metastatic Ca. (70 cases) No. smears* | *Malignant melanoma (3 cases) No. smears* | *Miscellaneous malig. diseases (10 cases) No. smears* | *Total* |
|---|---|---|---|---|---|---|---|
| "Positive for cancer cells" | 73 | 17 | 18 | 65 | 12 | 3 | 188 |
| "Probably positive for cancer cells" | 15 | 4 | 0 | 7 | 0 | 2 | 28 |
| "No cancer cells" | 31 | 10 | 8 | 20 | 0 | 6 | 75* |
| Total | 119 | 31 | 26 | 92 | 12 | 11 | 291 |

*Seventy-five first smears (25% of total) did not support a diagnosis of cancer and were repeated.
The Ontario Cancer Foundation London Clinic, London, Canada.

TABLE IV.—ASPIRATION SMEAR CYTOLOGY, CARCINOMA OF THE BREAST

| | *Examined* | | *Diagnosis confirmed by cytology* | | *False negative* | *Diagnosis of malignancy established on first aspiration* | | *More than one aspiration required for diagnosis* |
|---|---|---|---|---|---|---|---|---|
| | *Cases* | *% of total examined* | *Cases* | *% of total examined* | *Cases* | *Cases* | *% of total confirmed* | *Cases* |
| Primary cases | 80 | 100% | 74 | 93% | 6 | 61 | 82% | 13 |
| Recurrent cases | 20 | 100% | 18 | 90% | 2 | 15 | 83% | 3 |
| Total | 100 | 100% | 92 | 92% | 8 | 76 | 82% | 16 |

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rience with the technique. In the entire series of 100 cases of histologically proven cancer of breast, there were eight in which all smears were negative. These were regarded as true false-negative aspirations and will be dealt with subsequently.

Table V is based on 70 cases of metastatic carcinoma involving lymph nodes and 20 cases of primary malignant lymph node disease. Although reference has been made to the difficulties of establishing a diagnosis in the latter group, it is surprising how often one can cytologically distinguish malignant from benign conditions. To the clinician it is of real importance to establish the presence or absence of significant malignant lymphadenopathy in a site distant to that on which a histological diagnosis has already been made. Sixty-six of 70 cases of metastatic cancer in lymph nodes were confirmed by cytology, only four of which required repeat aspiration.

As a final appraisal, reference must be made to both false-negative and false-positive smears. A total of 18 in 203 malignant cases were regarded as true false-negatives. The breast group accounted for 8 of the 18. We would attribute most of these errors to the small size of lesion and perhaps a geographical miss, or inability of the 22-gauge needle to penetrate a very scirrhous tumour. Regardless of the accuracy and carefulness of both operator and pathologist, false-negative results are bound to occur, as with biopsy in a small proportion of cases.

Similarly, the occasional false-positive will be reported. In this entire series there were only five: two in subsequently proven cases of fibroadenomata of breast (one patient was pregnant); one in a case of microcystic disease of breast; one in a benign lymphadenopathy; one, the final and most interesting case, was one in which an organizing bursitis was interpreted as a chondrosarcoma. But again it should be repeated that, with careful appraisal, a false-positive report should prove to be of little clinical consequence.

### THE INFLUENCE OF CYTOLOGY ASPIRATION ON CANCER CLINIC PRACTICE

There are sufficient numbers of inflammatory swellings referred to a cancer clinic as possible new growths that one is compensated in dealing with these by quickly establishing the diagnosis and passing on information as to bacterial type and sensitivity. Without enumerating, one thinks of the occasional tuberculous adenitis, actinomycosis, or non-specific suppurative adenitis uncovered. At a stage before clinical suppuration the inflammatory exudate, as revealed in the smear, is the diagnostic clue.

In the parotid, thyroid and miscellaneous groups listed in Table II, insufficient experience has been gained from the limited volume for a sensible appraisal, but immeasurable assistance is often obtained in such isolated lesions as the bone tumour, soft tissue tumour, accessible cyst, salivary tumour, and many others. The aspiration of Virchow's node occasionally gives a lead in the diagnosis of some deep-seated, yet disseminated, malignancy; or, if positive, it alters the management of entities such as mammary or bronchogenic cancer. Many such individual experiences serve in lending support to the enthusiastic impression of the importance of cytology that we have gained

TABLE V.—ASPIRATION SMEAR CYTOLOGY, MALIGNANT LYMPHADENOPATHY, PRIMARY AND SECONDARY (METASTATIC CARCINOMA)

| | *Examined* | | *Diagnosis confirmed by cytology ("malignant cells")* | | *False negative* | *Diagnosis of malignancy established on first aspiration* | | *More than one aspiration required for diagnosis* |
|---|---|---|---|---|---|---|---|---|
| | *Cases* | *% of total examined* | *Cases* | *% of total examined* | *Cases* | *Cases* | *% of total confirmed* | *Cases* |
| Primary malignant lymphadenopathy | 20 | 100% | 17 | 85% | 3 | 15 | 88% | 2 |
| Metastatic carcinoma in lymph nodes | 70 | 100% | 66 | 94% | 4 | 62 | 94% | 4 |
| Total | 90 | 100% | 83 | 92% | 7 | 77 | 93% | 6 |

The Ontario Cancer Foundation London Clinic, London, Canada.

from a study of the major and more common groups encountered.

*Breast.*—Tumours of breast, being so common and so accessible, are particularly well suited for aspiration cytology. From Table IV it is seen that of 80 primary cases of breast cancer 74, or 93%, were diagnosed cytologically. Although not eliminated, the frozen section need seldom be used. In a clinical research series, our radiotherapy staff has now extended the use of preoperative cobalt-60 therapy to include stage 1 breast cancer: previously, such management was recommended for the obviously clinical stage 2 group. So little has been done differently for early breast cancer in the past 30 years that it becomes a little painful psychologically to continue to pin one's faith on the established routine of frozen section, surgery and postoperative irradiation. Establishing proof of the early lesion permits a clinical research approach in the way of preoperative tumour devitalization by radiomimetics or ionizing rays.

Perhaps the most dramatic effect of aspiration on the patient is proving a questionable breast lump to be cystic. The patient's tense anxiety is relieved. Taking an immediate frozen section is obviated, and a planned approach to the management of this knotty problem is permitted. Of 91 cysts of the breast aspirated, only one was reported as "probably positive", and clinical follow-up of this case proved the cytological finding to be the only false-positive in the series. All others were negative.

A smaller group of inflammatory breast lesions appear in most cancer clinics. The exudative type of cytology is readily recognized and appropriate treatment arranged.

*Metastatic cancer in lymph nodes.*—Table V shows that of 70 such cases, 94% were confirmed by cytology. The significance of such accuracy is applicable in particular to nodes secondarily involved from cancer of the head and neck. One learns to detect clinically the malignantly involved node or the node within normal limits. At times, the clinical impression can be wrong for either category. It is not suggested that aspiration be done in all circumstances, but when in doubt with the "questionably significant" node it is safer to establish diagnosis immediately than "review in one month". Earlier diagnosis, therefore, with all it implies, is the main point gained by this procedure.

There is an older age group in which it is important to establish a diagnosis for two main reasons: if primary oral cancer, for example, is being treated by external irradiation one would include an adjacent (cytologically positive) node in the treatment field; and secondly, if the patient's general condition precludes extensive surgery to remove a lymph node known to be invaded, it is a much simpler problem to manage curatively by irradiation when tiny than if grossly malignant.

*Primary lymph node tumours.*—Smear diagnosis by aspiration of primary malignant lymphomas has not been generally reliable in our hands. Occasionally it has been possible to make a reasonably certain diagnosis of Hodgkin's disease or reticulum cell sarcoma by such a method, but the diagnosis of lymphosarcoma and lymphatic leukæmia has been virtually impossible by the smear method. Features such as lymph node architecture, invasion of capsule and perinodal tissue, and appearance of follicles cannot be discerned by smear. The study of the whole lymph node is so often required for a correct diagnosis that for the time being we are reluctant to concede that cytological examination is an acceptable diagnostic substitute.

## SUMMARY

An appraisal has been made of the accuracy and applied clinical value of aspiration cytology in 203 cases of cancer and 194 cases of deep-seated benign disease. A total of 524 smears was made. Exfoliative cytology and the cytology of effusions are not included in this study.

Without anæsthesia, a 22-gauge needle withdraws tissue fluid which is smeared on egg albuminized slides, fixed while still wet and stained by hæmatoxylin and eosin.

The pathologist's conventional attitude based on histology must give way to a cytological approach if the method is to have significant value.

In breast cancer 93% were confirmed cytologically, although in 18% more than one aspiration was required. Establishing diagnosis previously by this method permits a planned therapeutic approach and eliminates the need for frozen section examination in most instances.

In lymph nodes secondarily involved by malignant disease, 94% of diagnoses were confirmed by aspiration cytology, thereby permitting an earlier approach to management.

Although smear diagnosis of primary lymph node cancer is possible in this group, it is still advisable to make the diagnosis histologically, except in unusual cases.

No attempt in this study has been made to evaluate the accuracy of cytological smear examinations in benign breast disease. The psychological effect of immediately establishing the diagnosis of cystic disease, however, is obviously most rewarding.

There were five false-positives (2.5%) in 194 benign cases; if interpreted in the light of clinical impression, this need be of little consequence.

Of 203 malignant cases, 18 (or 8.8%) gave a false-negative result. Eight of the 18 were in breast lesions and required further histological investigation.

The simplicity, accuracy and practical value of aspiration smear cytology for the solid tumour are established, and deserve recognition and wider application.

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## RÉSUMÉ

Afin d'obtenir une évaluation du degré de précision ainsi que de la portée clinique de la cytologie d'aspiration les auteurs ont examiné 524 frottis obtenus par cette méthode et recueillis dans 203 cas de cancer et 194 de lésion

bénigne profonde. La cytologie exfoliatrice et celle des épanchements ne furent pas incluses dans cette série. Sans anesthésie et au moyen d'une aiguille de calibre 22 on retire par ponction une gouttelette de suspension tissulaire que l'on étale ensuite sur une lamelle enduite au préalable de blanc d'œuf. Le tout est fixé à l'état frais et teint à l'hématoxyline-éosine. S'il veut conférer quelque importance à cette méthode, le pathologiste devra se départir de son attitude conventionnelle fondée sur l'histologie et en adopter une autre à base de cytologie.

Dans les cas de cancer du sein 93% reçurent une confirmation cytologique bien que dans 18%, plus d'une aspiration fut nécessaire. L'établissement d'un diagnostic par cette méthode permet un acte thérapeutique chirurgical plus rationnel et dans la plupart des cas rend inutile l'examen preopératoire extemporané. Le diagnostic d'envahissement des ganglions lymphatiques fut confirmé dans 94% des cas par cette méthode permettant ainsi d'orienter d'une façon plus précoce la conduite du traitement. On peut toujours obtenir un adénogramme par examen des frottis dans les cas de cancer primaire des ganglions lymphatiques, mais à moins de circonstances particulières, l'examen histologique semble préférable.

Les auteurs n'ont pas cherché dans cette étude à déterminer la précision de l'examen cytologique dans le diagnostic des affections bénignes du sein. L'effet psychologique dans la détermination immédiate du diagnostic de kyste est cependant des plus encourageants. Il y eu cinq résultats faussement positifs (2.5%) dans les 194 cas bénins, erreur qui à la lueur des impressions cliniques est de peu d'importance. Des 203 néoplasmes malins, 18 ou 8.8% donnèrent un résultat faussement négatif. Huit d'entre eux étaient des lésions du sein et exigèrent un examen histologique plus poussé. La simplicité, la précision et la valeur pratique des examens de frottis cytologiques d'aspiration dans les cas de tumeur solide sont établies et méritent une reconnaissance plus étendue et des applications plus nombreuses.

## EXPERIENCE WITH SERUM GLUTAMIC OXALOACETIC TRANSAMINASE*

FRANKLIN BERKMAN, M.D., F.R.C.P.[C], M.Sc., and A. N. BHARGAVA, M.D., B.S.,
*Ottawa, Ont.*

THE SERUM transaminase (SGO-T) estimation was introduced into clinical medicine by LaDue[1] and co-workers less than five years ago and has become established as a useful diagnostic test in various clinical states. The historical and biochemical background and the clinical application of the test have been reviewed by Conrad[2] and Wroblewski[3] in excellent key articles.

Glutamic oxaloacetic transaminase is present in all cells and is released into the serum with cellular breakdown. Normal human serum contains 4-40 units.[3] With injury to cells rich in the enzyme, much higher serum levels occur. The SGO-T test has proved of greatest value as a sensitive indicator of tissue injury when clinical evidence of this injury is uncertain and other laboratory tests give normal or equivocal results.

The purpose of this paper is to report some aspects of our experience with the test that point up its practical diagnostic value. This experience is derived from over 1000 SGO-T estimations on 375 patients studied at the Ottawa General Hospital. The method of Karmen[4] was used and nearly all the estimations were performed by one technician. Twenty-one estimations on 16 young normal adults gave values ranging from 10 to 40 units.

Heart muscle is particularly rich in GO-T. Some of the highest serum levels are obtained in diseases with injury to the myocardium. Fig. 1 illustrates our results in 112 patients with various types of heart disease. The following cases illustrate some of our findings.

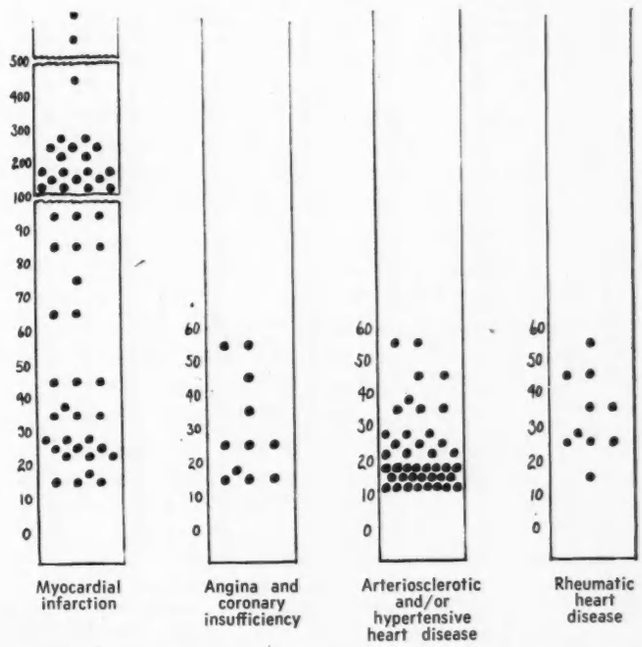


Fig. 1.—Transaminase values in 112 patients with various types of heart disease. Each dot represents the highest value obtained in a single patient. Numbers represent SGO-T units/ml.

CASE 1.—J.L., a 46-year-old man, was admitted on November 21, 1956, with a history of recurring severe retrosternal pains for 24 hours. The pains frequently radiated to the arms and were accompanied by sweating, nausea and vomiting. Over the preceding three weeks he had suffered from the occasional anginal type of pain. Examination revealed him to be acutely ill, dyspnœic and sweating. B.P. 140/100 mm. Hg, pulse 75. The heart was enlarged to the left, and moist rales were present over the right lung base.

On November 23 a pericardial friction rub was noted and the temperature reached its maximum of 103° F.

*From the Department of Medicine, University of Ottawa and the Ottawa General Hospital. The study on which this paper was based was supported by a grant from the Ontario Heart Association.

Canad. M. A. J.
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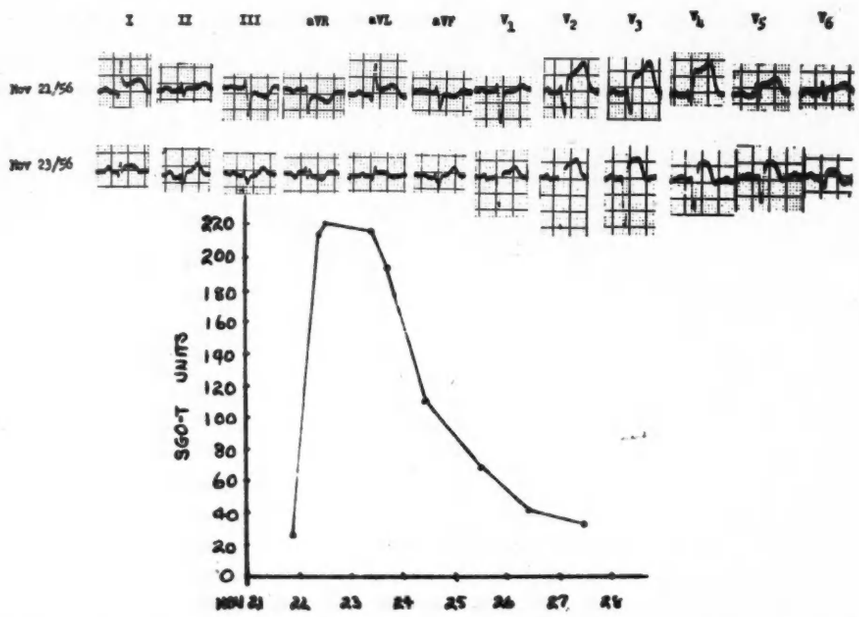



Fig. 2.—Case 1, J.L. Initial tracing, November 21, 1956, shows changes of fresh anterior infarction. Second tracing, November 23, 1956, shows evolutionary changes. Typical SGO-T "curve" with a peak level at about 24 hours and return to normal by the fifth day.

The electrocardiograms and SGO-T findings are shown in Fig. 2. The initial tracing (November 21, 1956) shows the changes of fresh anterior infarction, and the second tracing (November 23, 1956) shows typical evolutionary changes.

*Comment.*—This classical case of anterior myocardial infarction demonstrates a typical SGO-T "curve" with a peak level at about 24 hours and return to normal by the fifth day.

CASE 2.—This 66-year-old man was admitted on November 2, 1956, because of severe anterior chest pain of one-half hour's duration. There was a one-week history of chest pains, anginal in type, before admission. Investigation, 15 months previously, revealed benign essential hypertension and bronchiectasis.

On admission the B.P. was 130/80 mm. Hg and the pulse 84. There were no abnormal findings on examination. The temperature rose to a peak of 101° F. on the second day.

The electrocardiograms and SGO-T findings are shown in Fig. 3. The initial SGO-T level was 75 units per ml. six hours after onset of pain.

*Comment.*—This classical case of posterior myocardial infarction demonstrates a significant elevation of SGO-T value at six hours after onset of infarction, with a peak at about 30 hours and a return to normal by the fourth day.

Our findings in the group with myocardial infarction agree closely with those in the literature, and it may fairly be stated that the great majority of patients will show elevation of SGO-T values. In most patients a significant elevation will be present at five or six hours after onset of infarction, with a peak level between 18 and 36 hours and a return to normal in three to six days. There is a rough correlation between the size of the infarct and the height and duration of the SGO-T level.[5] It would be reasonable to expect a poorer prognosis in patients with higher levels.

The white blood cell count, erythrocyte sedimentation rate and rectal temperatures are frequently used by clinicians to assess the presence and degree of muscle necrosis. We have frequently found one or more of these to be normal in the presence of elevated SGO-T values, and consider the enzyme test to be the most sensitive index of muscle damage.

Problems in diagnosis may arise because of the *location* of a myocardial infarct. The majority of infarcts produce in the electrocardiogram a deformity of the initial portion of the QRS complex that results in a "Q wave" in one or more of the conventional leads. Many physicians, when interpreting electrocardiograms, are hesitant to diagnose infarction without "Q waves" although such infarcts

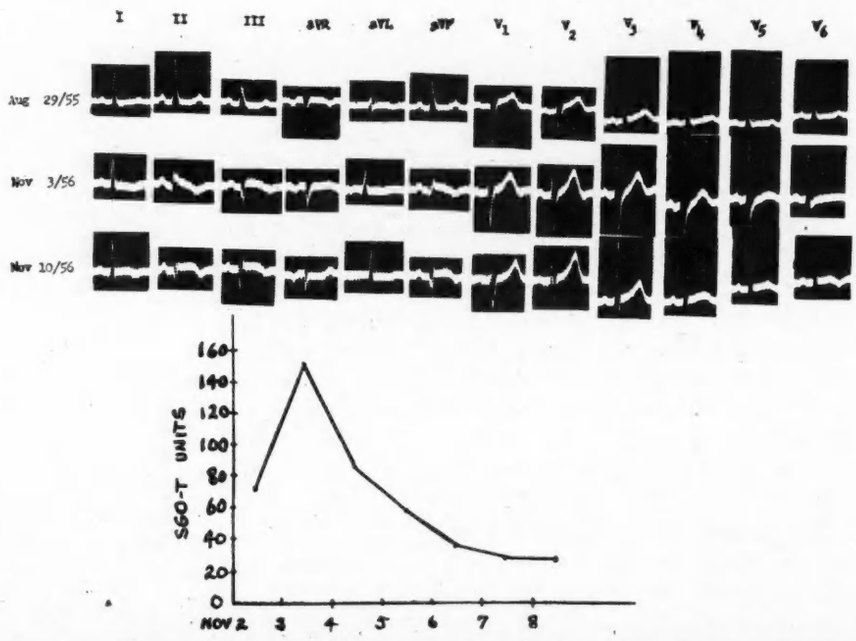



Fig. 3.—Case 2. Initial tracing, August 27, 1955, taken before infarction. Second tracing, November 3, 1956, taken 24 hours after onset of posterior infarct. There is a significant elevation of SGO-T at six hours after onset of infarction, with a peak at about 30 hours and a return to normal by the fourth day.

occur not infrequently. Thus SGO-T estimations will be most helpful in the diagnosis of the infarcts described electrocardiographically as "high posterior", "direct posterior", "anterior subendocardial" or "infarct with T wave changes only".

*Delay* in the development of good electrocardiographic evidence of infarction has frequently resulted in mistakes in diagnosis or delay in treatment with serious results. Most physicians are aware of patients with myocardial infarction who have had a laparotomy for suspected abdominal disease—the typical electrocardiographic features being absent or late in development. Estimation of SGO-T should prevent errors of this type.

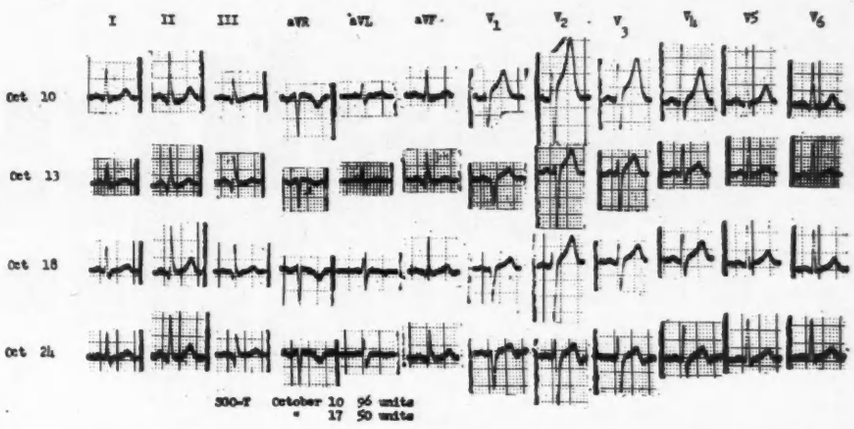



Fig. 4.—Case 3, L.K. Initial tracing, October 10, 1957, suggests early injury. SGO-T at this time was 96 units. Repeat tracing, October 13, reveals a small anteroseptal infarct.

CASE 3.— L.K., a 69-year-old man, was admitted on October 10, 1957, because of anterior chest pain. The clinical picture and routine laboratory tests did not permit a definite diagnosis. The electrocardiogram and SGO-T findings are shown in Fig. 4.

The initial electrocardiogram (October 10) reveals a tall peaked T wave in $V_2$ suggestive of early injury, but one would be hesitant to diagnose infarction from this tracing. A repeat tracing three days later reveals loss of initial r in $V_1$ and decrease of r in $V_2$ and $V_3$ with subsidence of T wave peaking – fairly good evidence of a small anteroseptal infarct. Subsequent T wave changes, particularly in aVL and $V_1$-$V_4$, make the electrocardiographic diagnosis almost certain.

*Comment.*—The finding of an elevated SGO-T value permitted an early diagnosis of myocardial infarction in this patient with equivocal early electrocardiographic findings.

CASE 4.—M.M., a 59-year-old man, was admitted because of chest pain first noted on May 9, 1957. This became more severe two days later. The electrocardiograms and SGO-T findings are shown in Fig. 5.

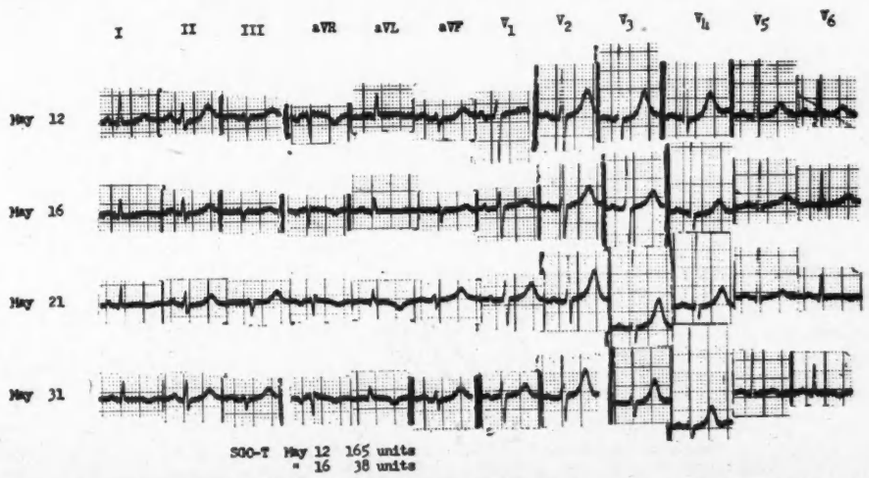



Fig. 5.—Case 4, M.M. Initial tracing, May 12, is normal. The SGO-T at this time was 165 units. Subsequent tracings show development of T wave changes of the "ischæmic type" but never any definite evidence of muscle necrosis.

The initial electrocardiogram (May 12) is within normal limits. The SGO-T value on the same day was 165 units per ml. A repeat tracing four days later reveals slight non-specific T wave changes. Subsequent tracings show inverted and symmetrical T waves of the "ischæmic type" in I, aVL and $V_6$. On strict electrocardiographic grounds one could not diagnose muscle necrosis with certainty in this series.

*Comment.*—Again the SGO-T finding permitted an early diagnosis of infarction. Suggestive electrocardiographic findings occurred later but there was never definite electrical evidence of muscle necrosis.

There are two abnormalities of conduction that mask the finding of infarction on the electrocardiogram and make the diagnosis, from the electrical standpoint, very difficult and frequently impossible. These are left bundle branch block and Wolff-Parkinson-White complexes. SGO-T determinations will reveal infarction in these situations, and this is a most important contribution of the test.[6]

CASE 5.—L.S., a 59-year-old man, was admitted with chest pain suggestive of myocardial infarction. He was mildly hypertensive and there was a history of myocardial infarction eight years previously.

A SGO-T value about 24 hours after onset of pain was 142 units. The electrocardiogram at this time showed a complete left bundle branch block (Fig. 6). On the third, fourth, fifth and sixth days SGO-T values of 150, 76, 60 and 35 were obtained. Repeat electrocardiograms on the fourth and subsequent days showed clearing of the left bundle branch block, and changes consistent with a posterior infarct.

*Comment.*—SGO-T estimation permitted an early and correct diagnosis of myocardial infarct at a time when the electrical changes characteristic of infarction were masked by the presence of left bundle branch block.

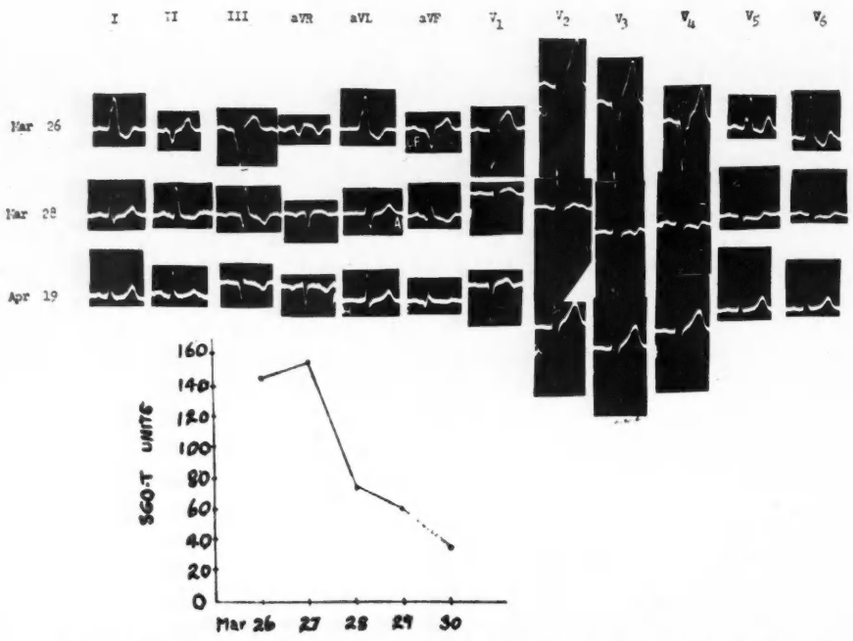



Fig. 6.—Case 5, L.S. Initial tracing, March 26, done about 24 hours after infarction, shows left bundle branch block. SGO-T at this time was 114 units. Subsequent tracings revealed clearing of the conduction defect and changes consistent with a posterior infarct.

Infarcts always leave scars on the myocardium and frequently abnormal "Q waves" on the electrocardiogram. With the occurrence of a second infarct it is sometimes difficult to assess the amount of new cellular necrosis because of the previous electrocardiographic changes. SGO-T estimation has proven helpful in this situation.

Patients judged to have angina pectoris or coronary insufficiency by classical clinical criteria usually have normal levels of SGO-T.[7] Three of 11 patients in this category (Fig. 1) had SGO-T levels up to values of 40 to 60 units. These mild elevations indicate that muscle necrosis may occur in such patients. The findings in these three patients emphasize the fact that separation of patients with myocardial infarction from the group with coronary insufficiency has been inexact. The therapeutic implications of this conclusion are obvious.

Further examination of Fig. 1 shows that 17 of 50 patients with myocardial infarction had normal SGO-T levels. Examination of these 17 patients revealed that in each instance the SGO-T had not been estimated until after the fourth day.

Liver cells are also rich in GO-T. Many types of hepatic injury result in release of enzyme from the cells with elevations of serum values. The injury may be chemical in nature, as in toxic hepatitis due to carbon tetrachloride[8] or chlorpromazine.[9]

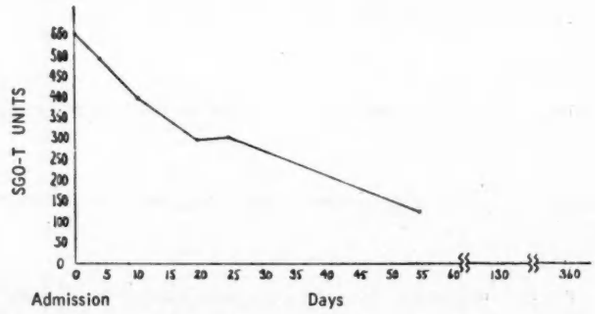
Viral infections, such as acute infectious hepatitis, homologous serum hepatitis and hepatitis complicating infectious mononucleosis, may result in very high SGO-T levels.[8]

The laboratory findings in a case of severe infectious hepatitis are shown in Fig. 7. SGO-T levels in this case were elevated for an unusually prolonged time.

SGO-T levels have proven to be a very sensitive index of liver injury in hepatitis; elevations may be present when results of tests of liver cell function are unaltered or only slightly abnormal, as in the prodromal phase of infectious hepatitis or in non-icteric hepatitis. Continued elevation of SGO-T value suggests chronicity of hepatic infection. Elevations of SGO-T value are probably the best index of relapse and a valuable guide to when ambulation should be allowed.

The variations of SGO-T in cirrhosis are most interesting. Mild to moderate elevations—usually less than 300 units—are frequent. In many patients, however, there is no elevation.[10] It is reasonable to assume that those with elevated SGO-T values have active disease, i.e. parenchymal injury. This is very useful information, as it may be available in no other way, even by histological examination. No important conclusions, however, can be drawn regarding liver *function*, for this may be markedly abnormal (ascites, jaundice, etc.) with a normal SGO-T, or mildly abnormal (as shown by liver function tests) with SGO-T elevation. It would appear that deterioration in a cirrhotic due to superimposed hepatitis may now be more easily differentiated from hepatic decompensation due to progressive scarring. In the latter, SGO-T levels may remain normal. The test may also prove useful in assessing etiological factors and therapy.

Patients with extrahepatic obstructive jaundice usually show elevations of SGO-T of less than 300 units.[9] Our series includes seven patients of this type, and all showed abnormal elevations. However, the maximum value in six of these seven patients was below 80 units. With relief of obstruction SGO-T returns to normal, usually within one week.




| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Thymol turbidity | 16 | 14 | 2 | | | | 0.4 |
| Cephalin flocculation | 4+ | | 3+ | | | | neg. |
| Total bilirubin | 1.9 | 2.4 | 1.7 | 0.6 | | 0.5 | 0.4 |
| B.S.P. | 55% | | | 32% | | 4% | |

Fig. 7.—Laboratory findings in a case of severe infectious hepatitis.

The important differential diagnosis of "surgical jaundice" from jaundice due to viral hepatitis is often facilitated by consideration of enzyme activity.[12] In hepatitis the SGO-T value is often over 500 units early in the disease, with subsidence towards normal in a week or two. The serum alkaline phosphatase value is normal or slightly elevated—usually below 10 units. In obstructive jaundice SGO-T is low initially and does not reach very high levels—usually below 300 units, while the alkaline phosphatase is elevated early and sometimes reaches 40-50 units.

Malignant disease of the liver, either primary or secondary, frequently produces sufficient hepatic cellular injury to elevate SGO-T. After excluding patients with cardiac disease and obstructive jaundice, there was only one patient in our series in this group. This was a case of carcinoma of the stomach with massive metastases in the liver, proven by autopsy. SGO-T values of 84 and 95 units were recorded. The serum bilirubin and cephalin cholesterol flocculation were normal.

It is occasionally difficult to determine whether an elevated serum alkaline phosphatase is due to bone or liver disease. Since SGO-T is normal in bone disease, this provides a useful method of differentiation.

One would anticipate elevated SGO-T values in bacterial infections involving the liver. A 65-year-old leukæmic man in our series showed SGO-T values of 280, 292 and 152 units shortly before death due to septicæmia. Antemortem blood culture revealed a paracolon organism. The total serum bilirubin was 5.5 mg. %. Autopsy revealed acute suppurative pyelonephritis and multiple liver abscesses. There is, of course, no proof that the enzyme elevation was due solely to hepatic involvement here.

Two patients in our series with tuberculosis showed mild elevations of SGO-T values. One patient had miliary tuberculosis and the other tuberculous meningitis. One can only speculate as to the source of the enzyme in these cases.

Elevations of SGO-T values have been reported in various diseases involving injury to kidney, pancreas, brain or skeletal muscle. Elevations reported in eclampsia and pre-eclampsia are probably related to hepatic injury. Our experience in these latter conditions is not sufficiently extensive to permit any conclusions. A wide variety of diseases were surveyed in our study, and apart from the conditions referred to above all showed normal SGO-T levels.

## Conclusions

The value of the SGO-T estimation has been studied in a large variety of diseases in a general hospital, using a relatively simple technique of estimation. The test has proved of great practical value in certain clinical situations, and will occasionally resolve otherwise insoluble problems.

The authors wish to thank the numerous physicians in the Ottawa area for permission to study their cases, Dr. R. K. Smiley for his critical review of this paper and his helpful suggestions, and Mrs. Florence Robertson who performed most of the SGO-T estimations.

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## Résumé

La transaminase glutamique oxalo-acétique se retrouve dans toutes les cellules de l'organisme et est libérée dans la circulation à la suite de la désintégration cellulaire. Normalement le sérum en contient 4-40 unités. En cas de destruction de tissus riches en cet enzyme ce taux s'élève considérablement. L'auteur expose ici les résultats de plus de 1000 déterminations chez 375 malades traités à l'hôpital général d'Ottawa.

Le myocarde est particulièrement bien pourvu de transaminase. L'élévation du taux sérique dans l'infarctus postérieur se manifeste six heures après l'atteinte avec maximum aux environs de 30 heures et retour à la normale vers la quatrième journée. Ces déterminations apportent un concours précieux à la confirmation d'un diagnostic lorsqu'un des critères habituellement employés n'offre pas les indications qu'on s'attend à trouver: l'électrocardiogramme peut quelquefois tarder à révéler une anomalie, la leucocytose ou l'élévation de la sédimentation ne sont pas toujours aussi tranchées qu'on aimerait les voir.

Les atteintes hépatiques donnent aussi des valeurs élevées de T.G.O.S. Les hépatites par tétrachlorure, chlorpromazine, virus ou autres causes produisent une élévation du taux de l'enzyme souvent de plus de 500 unités avec retour à la normale en une ou deux semaines. Encore ici cette élévation se retrouve avant les altérations des épreuves de fonction hépatique. Une élévation moyenne de moins de 300 unités se voit dans les cirrhoses. La T.G.O.S. ne doit pas être considérée comme une manifestation de la fonction hépatique puisqu'on a déjà vu des cas de jaunisse et d'ascite avec des taux normaux et inversement des atteintes légères avec des taux élevés. L'obstruction extra-hépatique donne des niveaux du même ordre que ceux de la cirrhose. Dans les maladies osseuses la T.G.O.S. est normale. D'après sa détermination il est donc possible d'attribuer une élévation de la phosphatase alcaline à un désordre hépatique si la T.G.O.S. est également élevée.

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## THE RESPONSIBILITY TO RECORD

"The scientific investigator derives a great pleasure from the work that he does and from the experience that he gains; but there are those who do not appreciate that they have a responsibility, not only to themselves, but also to the community which provides the facilities for their work. This responsibility means the passing on of any knowledge that they may have acquired; after all, they were able to do their work only because of information that had been conveyed to them from others. Indeed, I would think that there is only one form of labour which the average man shuns more instinctively and more consistently that the effort of thinking and of original observation; this is the task of carefully recording his observations and thoughts."—E. S. J. King: *M. J. Australia*, 11: 853, 1958.

Canad. M. A. J.
June 1, 1959, vol. 80

# THE SYSTOLIC MURMUR IN MITRAL STENOSIS*

G. G. GELSTEIN and L. M. FITILEVA,
*Moscow, U.S.S.R.*

ACCORDING to older concepts, the differential diagnosis between incompetence of the mitral valve and stenosis of the left atrio-ventricular opening appeared to be simple and devoid of difficulties. The apical systolic murmur was considered to be the main differential diagnostic sign, and it was thought to be caused by the reflux of blood from the left ventricle into the left atrium. During the early stages of cardiac surgery, similar views were held by most of the surgeons, who accepted for their own use the sum total of knowledge of therapeutic clinics on this question.

Thus, according to Ravin *et al.* (1952)[1] and Johnson, Kirby and Zinsser (1955),[2] a loud systolic murmur points to the prevalence of incompetence in the clinical picture of mitral disease; Griffith *et al.* (1953)[3] consider the most important symptom of mitral incompetence a loud whistling systolic murmur at the apex, combined with increased pulsation and left ventricular hypertrophy. According to de Bettencourt (1953),[4] the main sign of mitral incompetence is the systolic regurgitation, accompanied by an apical systolic murmur.

D'Allaines, Dubost and Blondeau (1953)[5] are even more emphatic in their pronouncements on this subject. According to them, a systolic murmur at the apex is the only reliable sign of mitral incompetence.

Similar views are held by Gibbon *et al.* (1954),[6] who believe that a loud systolic murmur at the apex is a most unusual symptom in a case of mitral stenosis.

Thus, the view that a systolic murmur is the basic factor in differential diagnosis between mitral incompetence and mitral stenosis was at first taken for granted in surgical clinics.

However, as experience accumulated and comparison of facts found at operation with the data of preliminary preoperative examination of patients went on, it became evident that the presence of a systolic murmur at the apex could not be considered as an absolutely reliable sign of preponderant mitral incompetence.

For instance, in a number of patients, despite the presence of a systolic apical murmur, operation revealed tight mitral stenosis, with the area of the opening measuring 0.4-0.5 sq. cm. According to Bailey (1955),[7] such a systolic murmur was found in 38.1% of patients with a tight mitral stenosis complicated by auricular fibrillation and in 23.1% of cases with a normal sinus rhythm. According to Janton *et al.* (1954)[8] this occurred in 30% of cases, and according to Gialloretto, David and Barbezat (1957)[9] in 48.7% of cases.

*From the Institute of Thoracic Surgery, Moscow, U.S.S.R.

The above facts created an impression that the presence of a systolic apical murmur has lost all significance for differential diagnosis between mitral incompetence and mitral stenosis. However, even this point of view will not hold water, as in certain cases with a rough systolic murmur at the apex marked mitral incompetence was found at operation. Thus, an apical systolic murmur of equal intensity was found in patients with pronounced mitral stenosis as well as in those in whom mitral incompetence prevailed. Naturally enough, there arose a need to solve the question of the significance of a systolic murmur in each case separately.

We have analyzed auscultative and phonocardiographic data in 279 patients admitted to hospital for mitral stenosis. Endeavouring to get as clear-cut data as possible, we have intentionally omitted all cases with auricular fibrillation.

Of the above group 275 patients were operated on; 4 patients suffering from fourth-fifth stage of the disease died before operation.* All these patients had pronounced mitral stenosis. For the sake of convenience all patients were divided into four groups.

*Group 1. Patients without systolic murmur.*

This group included 217 patients (77.8%). They had only a presystolic or a meso- and proto-diastolic murmur. Despite the absence of a systolic murmur, 63 of them (29.0%) had mitral regurgitation confirmed at the moment of operation. In 32 cases the regurgitation was minimal, in 21 moderate and in 10 quite pronounced. In 36 patients (16.6%) the cusps of the mitral valve were calcified. Phonocardiograms in these patients revealed an accentuated first sound coming 0.06-0.11 sec. after the Q wave of the electrocardiogram.

Some 0.03-0.11 sec. after the second sound, the opening snap of the mitral valve was clearly seen in the form of a group of oscillations of low amplitude. The most characteristic sign in this group of patients was a presystolic or a mesodiastolic murmur. In single instances we noted a continuous diastolic murmur with maximum accentuation during presystole (Fig. 1).

*Group 2. Patients with a dominant diastolic and a short soft systolic murmur.*

This group consisted of 39 patients (14.0%). They had near the apex, besides a marked and predominating presystolic or meso- and proto-diastolic murmur, a short, soft systolic murmur. The latter was at its loudest at the apex and was not transmitted to other areas. In 17 patients (43.6%), re-

*According to Bakulev's classification, accepted in the Soviet Union, mitral stenosis passes through five stages. The fourth stage is characterized by marked cardiac hypertrophy, ECG changes pointing to marked alterations in the myocardium, high venous pressure, hepatomegaly, and usually dyspnœa at rest. In the fifth stage, there is even greater cardiac enlargement, considerable œdema, a large hard liver, and ascites; this stage is not responsive to therapy.

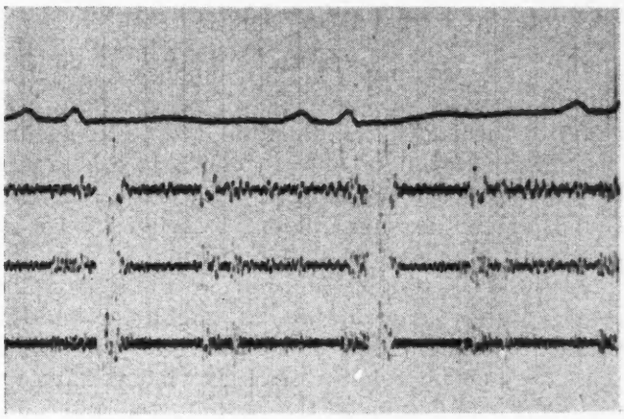

Fig. 1.—Phonocardiogram of a patient in Group 1. Heart apex. Accentuated 1st sound coming 0.07 sec. after the ECG Q wave. Opening snap of the mitral valve 0.3 sec. after the second sound. High-frequency presystolic murmur. Proto- and meso-diastolic murmurs intense.

gurgitation was found at operation. In two cases this was minimal, in seven moderate, and in eight pronounced. In 14 patients (35.9%) calcification of the mitral valve was found. After phonocardiographic investigation, all those patients were assigned to Group 2 who had besides the typical melody of mitral stenosis (accentuated, retarded first sound, presystolic or mesodiastolic sound; opening snap of the mitral valve) a short systolic murmur. This murmur merged with the first sound, gradually receded towards mid-systole, and stopped abruptly before the second sound (Fig. 2).

*Group 3. Patients with a marked and intense systolic and less clear-cut presystolic or meso- and proto-diastolic murmurs.*

This group consists of six patients (2.1%) who had a markedly intense systolic murmur at the apex associated with a less clear-cut presystolic or meso- and proto-diastolic murmur. In two patients the systolic murmur was at its loudest at the apex. In four cases the maximal intensity of the murmur was found in the xiphoid region.

Four of the patients were operated on; two died before operation. One of the four patients operated on was found at operation to have a minimal regurgitation. The murmur in this case

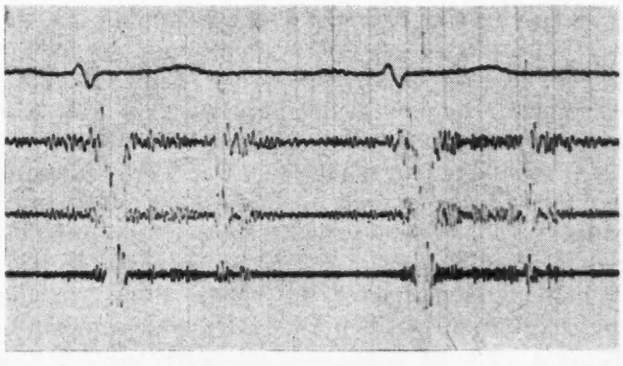

Fig. 2.—Phonocardiogram of a patient in Group 2. Heart apex. Accentuated 1st sound coming 0.06 sec. after the Q wave. Presystolic murmur merging with the 1st sound. Systolic murmur of inconstant duration and intensity. Opening snap of mitral valve comes 0.02 sec. after the 2nd sound. Short proto-diastolic murmur.

was loudest in the xiphoid region. In three out of six cases, calcifications of the mitral valve were noted. Phonocardiograms in this group were characterized by a marked high-amplitude, high-frequency, continuous systolic murmur. However, despite the marked systolic murmur, a presystolic murmur and in several instances a protodiastolic murmur were also recorded. These patients had another sign of mitral stenosis, an accentuated first sound, which appeared much later than the normal 0.04-0.05 sec. after the Q wave on the electrocardiogram (Fig. 3).

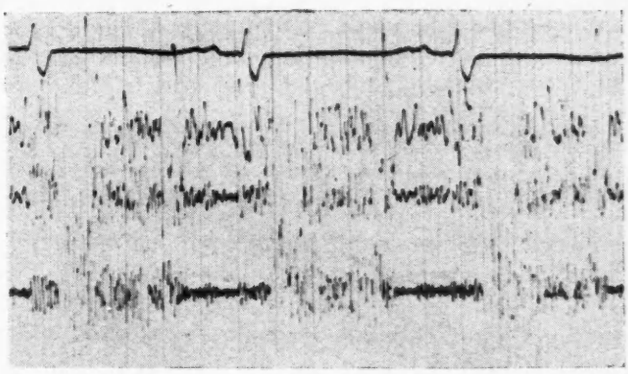

Fig. 3.—Phonocardiogram of a patient in Group 3. Heart apex. Accentuated 1st sound coming 0.07 sec. after the Q wave. Presystolic murmur. After the 1st sound a continuous, high-frequency, high-amplitude systolic murmur. Short proto-diastolic sound.

*Group 4. Patients with a systolic murmur unassociated with a diastolic murmur.*

This group consisted of 17 patients (6.1%), who had an intense systolic murmur at the apex without any diastolic murmur whatsoever. In 12 patients the systolic murmur was at its loudest at the apex. In five, its maximum intensity was located in the xiphoid region; in two the murmur was transmitted into the axilla. In this area, there were an accentuated first sound and a presystolic murmur. Of these 17 patients, 15 were operated on; two died before operation. In four cases the mitral valve cusps were calcified. In six cases (40.0%) regurgitation was noted at operation; this was minimal in four and moderate in two cases. In three out of four patients with minimal regurgitation, the murmur was most intense at the apex, in one case in the xiphoid region. In one patient with moderate regurgitation, the maximum intensity of the murmur was registered at the apex, in the other at the xiphoid. Phonocardiograms of this group were characterized by a typical sound pattern of mitral stenosis in the axillary region, while at the apex a continuous high-amplitude, high-frequency systolic murmur was recorded. Amplitude of the first sound was markedly increased and merged with a similarly high amplitude of the murmur (Fig. 4).

Thus, an apical systolic murmur was recorded by us in 62 out of 279 patients (22.2%) with a regular sinus rhythm. Twenty-one of them had calcified mitral cusps. Fifty-eight were operated on and four died before operation. Out of 58

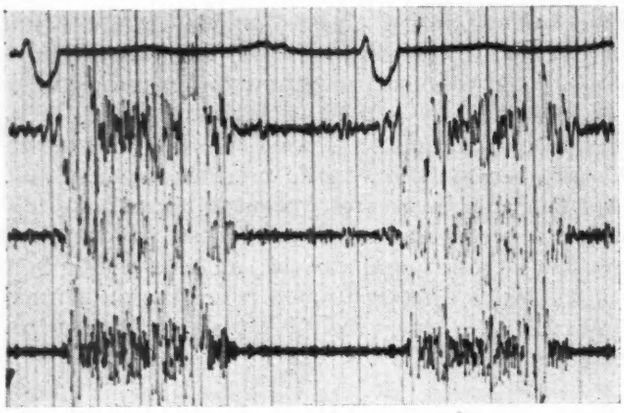

Fig. 4a.—Phonocardiogram of a patient in Group 4. Heart apex. Accentuated first sound coming 0.06 sec. after the Q wave. Continuous high-amplitude, high-frequency systolic murmur.

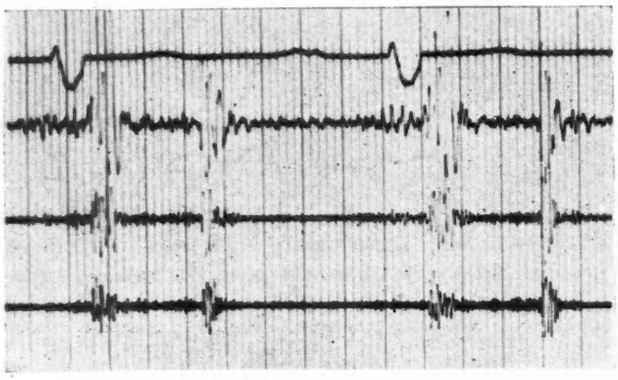

Fig. 4b.—Phonocardiogram of the same patient. "Zero point." Accentuated first sound coming 0.08 sec. after the Q wave. Continuous presystolic murmur.

patients, 24 were found at operation to have mitral regurgitation.

It is interesting to note that valvular calcifications and regurgitation were found not only in patients in stages II, III and IV of the disease, but also in patients in the first stage who had no systolic murmur preoperatively.

The purpose of our investigation was to find out the significance of the systolic murmur in differential diagnosis between mitral stenosis and mitral incompetence.

The solution of this problem was relatively easy in patients in stages II and III of the disease, who along with the systolic murmur had a presystolic or diastolic murmur. In the vast majority of cases, a diagnosis of predominance of mitral stenosis created no difficulty as a rule.

TABLE I.—INCIDENCE OF REGURGITATION AND CALCIFICATION OF CUSPS IN PATIENTS WITH MITRAL STENOSIS

| *Stage of disease* | *Total No. patients* | *No. of patients with calcif. cusps* | *No. of patients operated on* | *No. of patients with regurgitation* | | |
|---|---|---|---|---|---|---|
| | | | | *Min.* | *Mod.* | *Marked* |
| I | 217 | 36 | 217 | 32 | 21 | 10 |
| II | 39 | 14 | 39 | 2 | 7 | 8 |
| III | 6 | 3 | 4 | 1 | — | — |
| IV | 17 | 4 | 15 | 4 | 2 | — |
| Total: | 279 | 57 | 275 | 39 | 30 | 18 |

Differential diagnosis in patients belonging to the fourth group, who had only a systolic murmur at the apex, was much more complicated. After a careful analysis of our personal observations we came to the conclusion that the diagnostic factor deciding in favour of mitral stenosis in this group of patients is the presence of an accentuated first sound in the axillary region, associated with a diastolic (usually presystolic) murmur of varying intensity. The systolic murmur in these patients stops abruptly as a rule at the anterior or middle axillary line and is not transmitted into the axilla. It is true that in certain cases (in two according to our data), radiation of the systolic murmur into the axilla can take place, but even in these cases, along with the systolic murmur abruptly decreasing in intensity, one can hear an abrupt first sound and a short diastolic murmur.

According to our observations, in all cases when a rough systolic murmur heard over the entire anterior surface of the heart stopped suddenly at the anterior axillary line, and all over the axilla an accentuated first sound was heard in association with a presystolic murmur of varying intensity, the patients had a marked mitral stenosis with the valvular opening constricted to 0.4-0.5 sq. cm.

It must be noted that Froment *et al.* (1952)[10] had already pointed out that the presence of a systolic murmur in mitral stenosis, if the first sound is preserved in the upper axilla, is no evidence of mitral incompetence. These authors, however, did not stress the degree of association between the systolic and the diastolic murmurs and dwelt only on the localization of the systolic murmur—medial to the apex, nearer to the xiphoid.

As has already been said, we had 17 patients in the fourth stage of the disease (6.1%). All of these patients had a tight stenosis of the left atrioventricular orifice measuring as little as 0.4-0.5 sq. cm.

Diagnosis in all these cases was extremely difficult owing to the absence on auscultation of any diastolic murmur at the apex; this involuntarily made one think of a preponderant mitral insufficiency. Auscultation of the heart in the axillary region revealed a strongly accentuated first sound and a presystolic murmur of varying intensity.

In the light of concepts long ago established, the non-transmission of the systolic murmur to the axillary region justified rejection of the diagnosis of pronounced mitral incompetence in the vast majority of patients belonging to this group, but gave no foundation whatsoever for the diagnosis of mitral stenosis of such a degree as would justify surgery. That these patients showed accentuation of the second sound over the pulmonary artery and a marked deviation of the electrical axis to the right (angle $\alpha$ of 120-150°), with a depression of the S-T intervals in lead III and negative $T_3$ waves and electrocardiographic evidence of right ventricular hypertrophy in $CV_1$, suggested in no uncertain degree that mitral stenosis was present, but, never-

theless, this evidence was insufficient to diagnose its significant preponderance.

A detailed phonocardiographic study of these patients showed with much greater clarity the preponderance of mitral stenosis.

Heart sounds were recorded with the aid of a phonocardiographic attachment to the four-channel electrocardiograph. Three channels were used for phonocardiography at varying frequencies from 10 to 600 cycles, and one channel was used to record one standard electrocardiographic lead.

Phonocardiographic investigation of all the 17 cases revealed the presence of a retarded strongly accentuated first sound, immediately followed by a systolic murmur. Such a continuous group of high-frequency oscillations of considerable amplitude, lasting up to the second sound, is characteristic of severe cases of mitral incompetence, but the retardation and accentuation of the first sound at the apex are quite unusual in this condition.

Thus, it seemed that the patients had signs of marked mitral incompetence, but at the same time other signs were present which made such a diagnosis altogether improbable.

Quite another picture was revealed when phonocardiograms were taken from a point located in the 5th intercostal space along the anterior axillary line (the "zero point", according to the terminology accepted at the Institute of Thoracic Surgery). The phonocardiographic tracing recorded 0.10 sec. after the Q wave of the electrocardiogram a strongly accentuated first sound, whose greatest oscillation reached 38 mm. A low-frequency, low-amplitude presystolic murmur was recorded before the first sound. A short proto- and meso-diastolic murmur followed the second sound. The entire systole was free.

Thus, in contradistinction to the curves recorded in the apical region, a phonocardiogram taken from the "zero point" records a typical picture of marked stenosis of the left atrio-ventricular opening.

Such phonocardiographic data were obtained by us in 15 out of 17 patients belonging to this group. In the remaining two patients, a low-amplitude systolic murmur was recorded together with a marked presystolic murmur at the "zero point".

Appearance in the axillary region of a presystolic murmur, a strongly accentuated first sound, and disappearance of or decrease in intensity of a systolic murmur thus became characteristic of a tight mitral stenosis only. In those cases, on the other hand, when the systolic murmur was recordable at the "zero point", the first sound was not retarded and the diastolic murmur was absent, the diagnosis of preponderant mitral incompetence as a rule gave no rise to doubt.

Analysis of the above data permits us to share wholeheartedly the view that the presence of an apical systolic murmur in many instances cannot be considered as a contraindication to mitral commissurotomy.

This point of view is particularly convincing as presented by Gialloretto, David and Barbezat,[9] who studied the apical systolic murmur in relation to the degree of its intensity and extension and of its association with mitral regurgitation, calcification of mitral valve cusps and tricuspid incompetence.

Our investigations show, however, that the differential diagnostic significance of the apical systolic murmur does not depend on its intensity alone. In each separate instance one must consider whether the systolic murmur is associated with a presystolic or meso- and proto-diastolic murmur, a strongly accentuated first sound and other signs of mitral stenosis, always keeping in mind that the typical auscultatory signs of the latter may reveal themselves not in the classical projection zone of the mitral area, but in the axillary region.

Where the apical systolic murmur is associated with this or that variant of a diastolic murmur, as was the case with our patients belonging to groups 2 and 3, diagnosis of mitral stenosis is relatively simple. When the apical systolic murmur is unaccompanied by any diastolic murmur whatsoever, as was the case in group 4, diagnosis must depend on auscultatory and phonocardiographic study of the axillary region. Comparing the auscultatory data in patients belonging to group 4 with the findings at operation in 15 of them and at autopsy in two, we noted that all these patients had a considerable dilatation of the pulmonary artery with diameters up to 6-8 cm.

In the light of these findings we would like to advance a hypothesis that in this group of patients a greatly impeded blood flow from the left atrium into the left ventricle causes not only congestion in the pulmonary circulation but also an unusual dilatation of the pulmonary artery, which plays the role of a peculiar blood depot. Increased pressure in the pulmonary circulation places undue strain on the myocardium of the right ventricle and results in such a marked hypertrophy of its wall in these cases that the projection zone of mitral valve is displaced into the axillary region. The auscultatory picture typical of mitral stenosis in these patients is therefore found not in the usual region of the apical thrust, but much more to the left along the anterior and even the middle axillary lines.

It is difficult to say what causes the apical systolic murmur to develop in patients with mitral stenosis. According to older concepts its appearance is as a rule related to the presence of mitral regurgitation. However, this hypothesis is opposed by contrary arguments of sufficient weight. If we start with the premise that a systolic murmur in mitral disease is always the sequel of mitral reflux, then it is natural to suppose that, on the one hand, a systolic murmur should be present in all cases of mitral regurgitation, and on the other hand, in

all cases with an apical systolic murmur, mitral regurgitation ought to be present to some degree.

Yet comparison of auscultatory data with data obtained at operation does not always, or even nearly always, reveal such an interdependence. Thus, among our patients, mitral regurgitation was noted only in 24 out of 58 operated upon, in whom the apical systolic murmur was recordable and in 63 out of 217 patients who had no such systolic murmur.

Thus, in 34 out of 58 patients, despite the presence of a systolic murmur at the apex no evidence of regurgitation whatsoever was demonstrable during the operation, in any case, no evidence that could be detected by the operating surgeon's finger, and yet in 63 patients, who had no systolic murmur detectable either stethoscopically or phonocardiographically, regurgitation was definitely present. Even if we doubt the tactile sensitivity of the surgeon and attempt to explain the absence of regurgitation in the first group of patients on these grounds, it still remains entirely unexplained why in the second group the observed mitral regurgitation did not cause a systolic murmur to appear. The latter circumstance becomes even more confusing if we recall that in 10 out of 63 patients regurgitation was very marked. It is true that the objection might be raised that the reflux wave was not felt by the surgeon's finger because of the contractile weakness of the myocardium of the left ventricle. In that case it is difficult to conceive how the contraction of a weakened muscle, which is unable to initiate a reflux wave, is yet capable of producing a rough systolic murmur.

On the strength of our own data we feel, like Gialloretto, David and Barbezat,[9] justified in saying that in a number of patients at least, suffering from mitral disease, the apical systolic murmur may be caused by a number of factors other than the mitral regurgitation.

Several authors believe that one of the factors that causes a systolic murmur may be the calcification of the cusps of the mitral valve.

We also have found such calcification in 33.9% of patients who had a systolic murmur. However, we found calcified cusps in 16.6% of patients who had no such murmur. In the light of these facts we feel that calcification of the mitral cusps may be considered as one of the factors contributing to the development of a systolic murmur, but we see no reason to accord to this phenomenon a leading role or an independent role in causation of this symptom.

In a number of instances the apical systolic murmur may be explained by incompetence of the tricuspid valve. Gialloretto, David and Barbezat[9] believe that this origin of the systolic murmur should be given special credence when the murmur is at its loudest near the xiphoid process. According to them, this point of view becomes even more convincing when there are associated

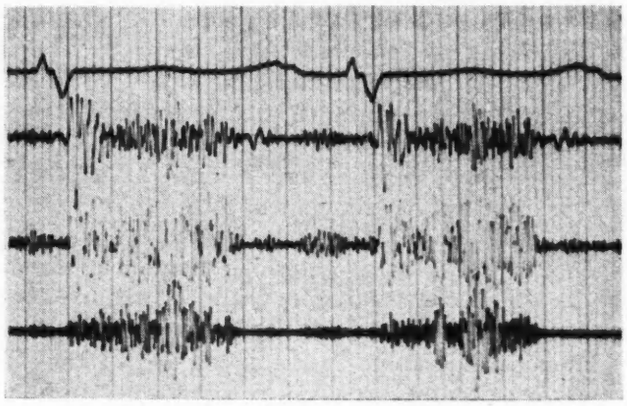

Fig. 5a.—Phonocardiogram of a patient with tricuspid incompetence. Heart apex. First sound of usual amplitude, coming 0.08 sec. after the Q wave. Continuous high-amplitude, high-frequency systolic murmur.

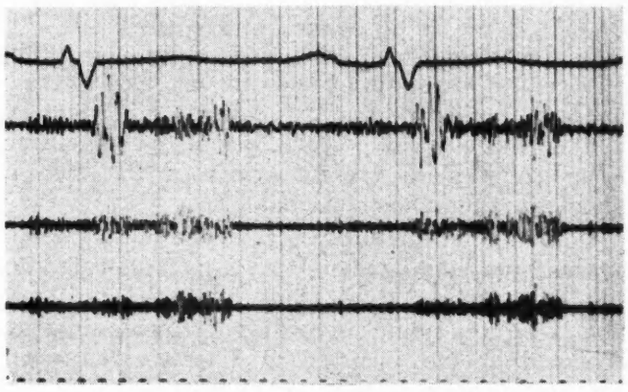

Fig. 5b.—Phonocardiogram of the same patient. Xiphoid region. Systolic murmur is less intense. Presystolic murmur.

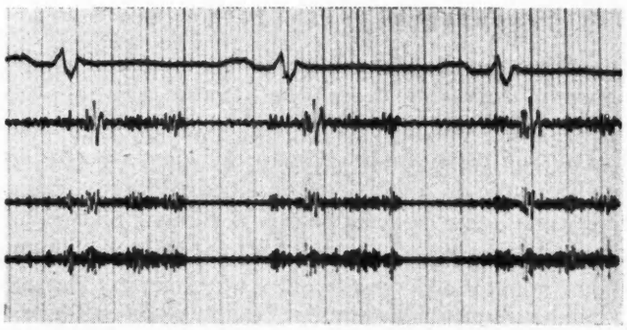

Fig. 6a.—Phonocardiogram of a patient with mitral stenosis unaccompanied by tricuspid incompetence. Heart apex. Lowered amplitude of the first sound, which comes 0.08 sec. after the Q wave. Continuous systolic murmur of low amplitude. Prolonged presystolic murmur.

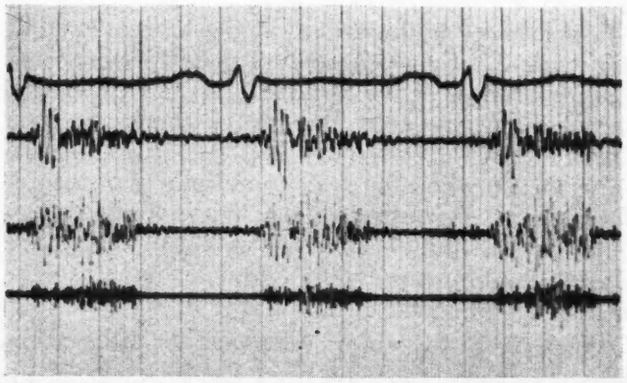

Fig. 6b.—Phonocardiogram of the same patient. Xiphoid region. Continuous systolic murmur increased in intensity.

roentgenological and electrocardiographic signs of right ventricular hypertrophy.

We used to agree with this view, but clinico-anatomical studies on four patients who died before operation have shaken to a considerable extent our certainty that it was correct. Tricuspid insufficiency was found at autopsy in two of the four patients. The systolic murmur in these cases was loudest at the apex and decreased in intensity in the xiphoid region (Fig. 5). In the remaining two patients there was no tricuspid insufficiency; the systolic murmur in one case, however, was loudest in the xiphoid region and in the other at the apex (Fig. 6). All four patients had pronounced roentgenological and electrocardiographic evidence of right heart hypertrophy.

Naturally, we cannot draw far-reaching conclusions on the basis of four cases only, but we must note that, firstly, in two out of the four cases it was altogether impossible to explain the systolic murmur on the grounds of tricuspid insufficiency, and secondly, the maximum intensity of the systolic murmur at the xiphoid cannot serve as a dependable diagnostic criterion of tricuspid insufficiency.

Thus, in some patients suffering from mitral stenosis the presence of an apical systolic murmur cannot be explained by mitral regurgitation, or calcification of the mitral valve cusps, or tricuspid incompetence. In all these cases the explanation of the apical systolic murmur must probably be sought in hæmodynamic peculiarities, the laws of which unfortunately remain unknown.

Patients with only an apical systolic murmur are of particular interest (Group 4). These patients have as a rule a markedly dilated right ventricle, which in some instances will overlap the shadow of the left heart, and an unusually dilated pulmonary artery. We suggest that the systolic murmur in this group of patients may be caused by obstruction to the blood flow from the dilated right ventricle into the widely dilated pulmonary artery, the obstacle being caused by a valvular ring of the artery with practically unchanged diameter. Disparity between the volume of blood and the diameter of the opening can, we believe, create conditions for a murmur to appear, such as would be caused by a functional stenosis of the pulmonary artery *sui generis*.

Localization of the systolic murmur at the apex, under these conditions, may be explained by peculiar topographic relationships between the segments of the heart and the unusual radiation of the murmur. These suggestions, though they have been confirmed indirectly by autopsy findings, cannot be considered as proved. We feel, however, that they merit detailed study and further clinico-pathological investigations.

## SUMMARY

The authors analyze auscultatory and phonocardiographic data in 279 patients with proved mitral stenosis. A systolic apical murmur was heard in 62 patients (22.2%). A group of 17 patients had an intense apical systolic murmur unaccompanied by any diastolic murmur whatsoever.

Patients who had a systolic murmur together with a presystolic meso- or proto-diastolic murmur presented no difficulty as far as the diagnosis of the preponderance of stenosis was concerned. Diagnosis was based on the detailed study of auscultatory and phonocardiographic data.

It was much more difficult to decide on the preponderance of mitral stenosis in patients who had only an apical systolic murmur. In these cases the presence of the auscultatory data typical of the mitral murmur in the axillary region rather than at the apex was the deciding factor. Preponderance of mitral stenosis was demonstrated best by phonocardiography.

The authors explain the uniqueness of auscultatory data in these patients by the rotation of the heart and the displacement of the projection zone of the mitral valve towards the left.

They believe that in a number of cases with mitral stenosis the presence of an apical systolic murmur cannot be explained by the mitral reflux, or the calcification of the mitral valve cusps, or tricuspid incompetence.

They believe that a systolic murmur in these cases may be due to some hæmodynamic peculiarities still unknown.

The authors suggest that in patients who have only a systolic murmur at the apex, this sign may be caused by a functional stenosis of the pulmonary artery.

NOTE.—The main results of the above investigations were reported at the First Annual Session of the Institute of Thoracic Surgery of the Academy of Medical Sciences of U.S.S.R. on December 2, 1957.

The authors take this opportunity to express their gratitude to the President of the Academy of Medical Sciences, Prof. A. N. Bakulev, for his unreserved help and encouragement in the preparation of this paper.

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## RÉSUMÉ

Les auteurs ont analysé les données auscultatoires et phonocardiographiques de 279 malades porteurs de sténose mitrale confirmée. On observa un souffle apical systolique chez 63 d'entre eux (22.2%) et 17 de ce groupe présentaient un gros souffle systolique à la pointe sans aucun souffle diastolique. Les malades à souffle systolique accompagné de souffle méso ou proto-diastolique n'offrirent aucune difficulté diagnostique en ce qui concerne la prépondérance de la sténose. Le diagnostic reposa sur l'étude minutieuse des signes auscultatoires et phonocardiographiques.

Il fut beaucoup plus difficile d'établir la prépondérance de la sténose dans les cas de murmure apical systolique seul. Chez ces malades le facteur décisif fut la présence de signes auscultatoires typiques d'un souffle mitral à la région axillaire plutôt qu'à la pointe. La prépondérance de

sténose mitrale reçut sa meilleure démonstration par la phonocardiographie.

Les auteurs expliquent la singularité des signes auscultatoires chez ces malades par la rotation du cœur et le déplacement de la zone de projection de la valvule mitrale vers la gauche. Ils croient que dans un certain nombre de mitraux la présence d'un souffle systolique apical ne peut s'expliquer ni par un reflux mitral ni par calcification de la valvule mitrale ni par insuffisance tricuspidienne.

Ils prétendent que le souffle systolique dans ces cas dépend d'une anomalie hémodynamique encore inexpliquée, et suggèrent que chez des malades qui ne présentent qu'un souffle systolique à la pointe, ce signe proviendrait d'une sténose fonctionnelle de l'artère pulmonaire.

# SUDDEN UNEXPECTED DEATH IN INFANTS*

C. P. HANDFORTH, B.Sc., M.B., B.S.,†
*Halifax, N.S.*

*"And this woman's child died in the night; because she overlaid it." 1 Kings, 3:19.*

IT HAS BEEN KNOWN since biblical times that apparently healthy infants may die suddenly for no obvious reason. The pathological changes found in these infants were thought to be produced by asphyxia but the cause of this could not be found and it was then assumed that death was due to accidental suffocation. This assumption is unsatisfactory as there is no direct evidence for it and it implies that the parents have been neglectful.[1] Recently it has been suggested that some of these infant deaths are due to infection, because microscopic inflammatory changes are often found at autopsy.[2] The way in which infection causes death and the reasons why there are no preceding signs of ill-health are not explained.

This paper is an account of the pathological changes found in 12 infants who died suddenly for no obvious reason. These changes are compared with the effects of acute asphyxia produced experimentally in rats.

## AUTOPSY FINDINGS

Autopsies were performed on 12 infants who died suddenly and unexpectedly between January 1957 and April 1958. The usual history was that the infant was put to bed at night apparently well and was found dead when next seen by the parents. The shortest interval between the infant's being put to bed and found dead was 15 minutes. Ten of these infants were boys and two were girls. All were less than six months old and the mean age was nine weeks. At autopsy the principal changes were in the intrathoracic organs. In all infants there were petechial hæmorrhages in the lungs, heart or thymus. The lungs were congested, and pink frothy fluid could be expressed from them. No internal obstruction of the respiratory airway was found in any of the 12 infants. In nine the larynx was examined with particular care and no gross abnormalities were seen. Microscopically the lungs were congested and œdematous and contained subpleural petechial hæmorrhages. An accumulation of inflammatory cells was found in the lungs of only two infants. The larynges of nine infants were examined microscopically and in each there was minimal congestion and œdema. The laryngeal mucous glands were distended with secretion, and in the tissue around the laryngeal ventricles there were some scattered plasma cells and occasional neutrophils. No constant bacterial flora was isolated from cultures of the heart blood or lungs. Cell-free extracts of the larynges of two infants and the lungs of nine were added to tissue cultures, and no cytopathogenic agents were detected.

## RAT EXPERIMENTS

Acute asphyxia was produced in 20 anæsthetized white male rats by sudden occlusion of an intratracheal cannula. The rats weighed from 220 to 490 g. Anæsthesia was induced in each with ether and maintained with sodium pentobarbital (Nembutal), 30 mg./kg. intraperitoneally. A glass cannula was inserted into the trachea of each rat through a midline incision in the neck. On this cannula there was a stopcock which could be turned to block the airway. Continuous records of the rats' intra-œsophageal pressures were obtained through a saline-filled polyethylene tube 1 mm. internal diameter connected to a Sanborn electromanometer. The tube was inserted through the rat's mouth until its tip was in the midthoracic region. The records indicate intrathoracic pressure changes before and after obstruction of the airway.

When the airway was suddenly blocked, respiratory movements became slow and forceful for 15 to 35 seconds. Then attempts to breathe ceased and there was complete apnœa for about 70 seconds. This apnœa persisted even if the airway was opened by turning the stopcock, but respiratory movements could be initiated again by giving artificial respiration for a few seconds. If this was not done, gasping respiratory movements occurred 1½ to 2 minutes after the airway was initially closed. Sometimes the gasps were weak and even though the airway remained open the rats died (Fig. 1). In rats which recovered, crepitant rales could be heard in the lungs, and sometimes pink froth appeared in the cannula.

Autopsies were performed on the rats, and intrathoracic petechial hæmorrhages were constantly found. There was also pulmonary congestion and some œdema. These changes resemble those found in the infants described above, though in the rats the pulmonary œdema was less prominent.

## DISCUSSION

A number of causes may contribute to sudden unexpected death in infancy, but the manner of death and the autopsy findings are always remarkably similar. The appearances of the dead bodies are those which have been associated for thousands

*This article is based on material presented to the Canadian Association of Pathologists at their annual meeting in Halifax in June 1958.

†Department of Pathology, Province of Nova Scotia and Dalhousie University, Halifax, N.S.

of years with respiratory obstruction and which may be simulated in rats by blocking the airway. The principal difficulty in accepting respiratory obstruction as the mechanism of sudden unexpected death in infancy is that usually there is no evident cause for it; very occasionally there is glottic œdema but inflammatory changes are ordinarily quite minimal.

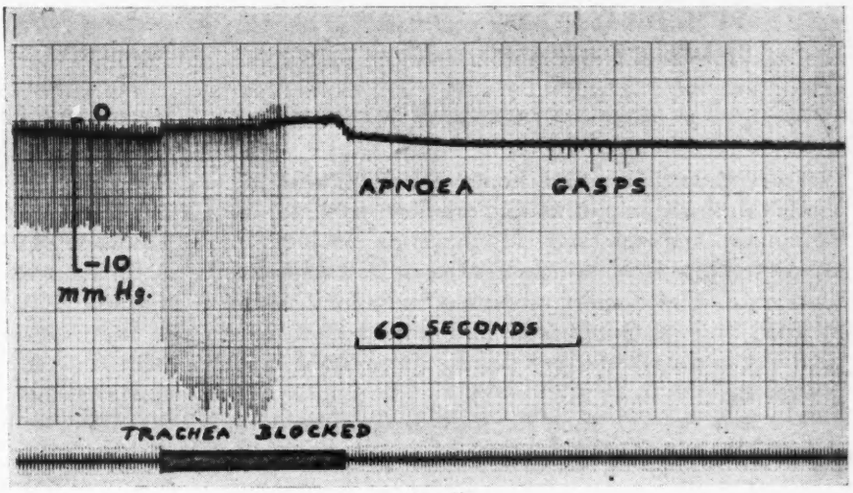


Fig. 1.—Intra-œsophageal pressure changes and temporary obstruction of the airway. Inspiration is recorded as a downward movement. The airway was blocked for 50 seconds and then opened. Gasping respirations followed a period of apnœa, and even though the airway was then open the rat died.

These minimal inflammatory changes, usually in the upper respiratory tract, appear to be the only basis for the widely held belief that such deaths are due to overwhelming infection.[3] This explanation is unsatisfactory in that the inflammatory changes are not marked and they are so localized. The theory offers no explanation for the suddenness of death, and is much weakened by the failure of all attempts to recover pathogenic micro-organisms from the blood.

The experiments on rats described above show that temporary respiratory obstruction in these animals can produce fatal apnœa. Respiratory arrest produced in this way might be the mechanism of sudden unexpected death in infants, and the obstruction could well be due to spasm of the larynx in the presence of only local and minimal inflammation. Infectious croup or laryngospasm has a sex, age and seasonal incidence closely corresponding to the incidence of sudden unexpected death.[4] Bronchitis and bronchiolitis are also accepted causes of temporary respiratory obstruction and might produce death by a similar mechanism. Obstruction by spasm has not previously been considered an adequate explanation of these deaths, because it is thought that such spasm ordinarily relaxes before respiratory movements cease. This is generally true in adults, but it is possible that in some infants temporary obstruction due to spasm may cause irreversible and fatal apnœa. An acute and early upper respiratory infection in infants might then cause death by producing spasm of the larynx and fatal apnœa; at autopsy there would be the changes in the intrathoracic organs generally associated with respiratory obstruction, together with minimal inflammatory changes in the larynx.

This theory has the further advantage that it would explain the similarity between the autopsy findings in infants who probably had respiratory infections and the findings in infants dying suddenly with some evidence that obstruction to respiration was external, as by pillows and bed clothes or even by overlaying.

## SUMMARY

A description has been given of the pathological changes found in 12 infants who died suddenly and unexpectedly, and these changes have been compared with the effects of acute asphyxia produced experimentally in rats. It has been shown that it is possible to produce fatal respiratory arrest in rats by temporarily blocking the airway. It is suggested that respiratory arrest produced in this way may cause sudden death in infancy, and that the temporary obstruction may be laryngospasm or bronchospasm due to infection.

I am grateful to Dr. W. A. Taylor for his advice and help in preparing this paper. The pressure recording apparatus was made available to me through the kindness of Drs. C. A. Gordon and C. B. Weld; part of this apparatus was purchased with a grant from the Defence Research Board. The attempts to isolate cytopathogenic agents from infant tissue were carried out by Miss R. S. Faulkner.

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## RÉSUMÉ

La mort subite de nourrissons, sans cause apparente, est reconnue depuis les temps bibliques. On a attribué la mort à l'asphyxie dans ces cas sans toutefois offrir de preuves satisfaisantes. Récemment la théorie de l'infection fut suggérée après qu'on eut trouvé chez ces enfants à l'autopsie des signes microscopiques d'inflammation; cependant l'intensité de cette prétendue infection ne correspond ni à la rapidité de son développement ni à la gravité de ses répercussions.

Le présent rapport est basé sur les constatations histopathologiques faites chez 12 nourrissons apparemment en santé et morts subitement. Les lésions observées furent comparées à celles que produit une asphyxie aiguë chez le rat. On trouva des pétéchies dans les poumons, le cœur et le thymus. Un liquide rosé et spumeux pouvait être exprimé des poumons congestionnés. Aucune cause d'obstruction respiratoire ne fut décelée. A l'examen microscopique on trouva des cellules inflammatoires dans deux cas seulement; aucun agent cyto-pathogène ne fut isolé et aucune flore bactérienne constante ne fut obtenue de la culture du sang cardiaque et pulmonaire. Des lésions semblables furent trouvées chez les animaux asphyxiés.

L'auteur opte pour la théorie du laryngo-spasme dont la fréquence pour l'âge, le sexe et la saison correspond à celle des morts subites des nourrissons. Une infection aiguë des voies respiratoires supérieures à ses débuts pourrait déclencher le spasme et provoquer une apnée fatale.

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# REHABILITATION: HOME PROGRAM*

G. GINGRAS, M.D.,† *Montreal*

PHYSIOTHERAPEUTIC and home rehabilitation methods are fairly recent in this country. In 1948, the Canadian Arthritis and Rheumatism Society inaugurated the first mobile treatment unit in Britsh Columbia. The Society provided units in Ontario in 1950 and in Quebec in 1952, and today more than 100 communities are served throughout eight provinces.

In Great Britain, such facilities have existed for the last 20 years, each county having several mobile units. Of course, concentration of population and relatively short distances prevent any constructive Canadian comparison.

The importance of home rehabilitation or habilitation is proportional to the number of shut-in persons. This was inferred in 1955 by the U.S. Secretary of Health, Education and Welfare in a report to Congress on a study of programs for homebound physically handicapped persons. This survey estimated that one million persons had been confined to the home for at least one year. This figure may easily be converted to fit our population.

W. Scott Allan in his recent book *"Rehabilitation, A Community Challenge"* indicates that the number of patients confined to the home in any given period is "at least two or three times the total of those in general and long-term institutions".

After the fashion of recent innovations in the field of public health, the importance of home services, particularly those dealing with rehabilitation, is related to the tremendous increase in chronic illness and the ever-growing problem of geriatrics.

The organization of a home program through public, charitable or private sponsorship requires the adoption of a strict policy to preserve ethics and to safeguard the patient-physician and the patient-therapist relationships. All cases treated must be and must remain under medical supervision. As Dr. Charles H. Mayo said, we must remember that "Medicine is about as big or as little in any community, large or small, as the physicians make it."

A medical assessment followed by a written prescription to the therapist is the most commendable practice. It has been ascertained also that a combined visit of the physician and therapist is a major contributing factor to good mutual understanding. Written reports, including suggestions, especially when dealing with long-term or chronic patients, keep the physicians conversant with the evolution of the case and allow modifications in procedures when warranted, and discontinuance upon attainment of maximal benefit.

The choice of the therapist or therapists is of paramount importance; graduation from a recognized school and accreditation by chartered professional bodies is essential.

When questioned on this subject, the chief therapist of the Montreal branch of the Canadian Arthritis and Rheumatism Society expressed the opinion that therapists engaged in this field were of necessity in daily personal contact, not only with the patients but also with their families and surroundings. This applies to a lesser degree in hospitals or clinics. Therefore, the need for tact, discretion and professional integrity cannot be overemphasized. Needless to say, absence of regular hospital facilities and ever-changing working conditions require a special disposition, initiative and resourcefulness.

Until now, only the word "therapist" has been used in this presentation. Experience has shown that, when coping with home treatment, physiotherapy alone is insufficient. The concept of rehabilitation involves more than the treatment of the affected limb or function. Treatments and procedures must be directed towards obtaining the greatest practical results. Besides optimum recuperation of motion or function, the patient must be encouraged to reach maximal independence compatible with his disability. Trivial achievements such as dressing and undressing, attending to personal hygiene, feeding, opening and closing doors, making use of the telephone, or propelling a wheelchair will be a thousandfold more important to both patient and family than the performance of a series of well-graduated exercises. Of course, these and other treatment modalities are by no means to be neglected as the basis of success. The final goal, however, is to obtain a happy medium, thus sustaining the client's morale and aspiring towards tangible results. The letters "A.D.L." are now of common usage in rehabilitation jargon; they stand for "activities of daily living". Possibly they stand also for the most important aspect of home rehabilitation.

It has been interesting and gratifying to observe the gradual implementation of this idea among therapists engaged in home therapy. Reports on individual patients invariably include comments on their client's participation in a program of daily activities. It may be worth while also merely to point out here the practical and realistic aspect of the combined course in physical and occupational therapy, as available at the Universities of Toronto and Montreal and now contemplated by other Canadian universities.

Individuals who devote their time to home rehabilitation are much more than what the terms "physical" and "occupational" therapists imply. The term "rehabilitation technician", as suggested by a prominent American physiatrist, attains its full meaning here.

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*Read before the Canadian Medical Association (Newfoundland Division) at Corner Brook on May 28, 1958.

†Director of the School of Rehabilitation and Professor of Physiatrics, Faculty of Medicine, Université de Montréal; Executive Director of the Rehabilitation Institute of Montreal.

In certain instances, physical and/or occupational therapy are insufficient as a means to maximum recuperation. The services of a speech therapist may be required, particularly in cases of cerebrovascular accident, to train both patient and family to improved communication. However, this service is at a premium because of the still amazingly low number of speech therapists in this country.

The social worker is another member of the rehabilitation team who has an important role in this scheme. An investigation at home before beginning treatment may be indicated in order to determine the local conditions, the financial situation and the degree of collaboration that can be expected from the family. Subsequent visits during and particularly after the completion of treatment can be an excellent contributing factor in the evaluation of the over-all result.

Not every patient qualifies for home rehabilitation. The selection may well be governed by criteria such as diagnosis, age and chronicity, but, of necessity, allowances must be made for circumstances arising from social, geographical and even climatic factors. As a basic principle, all patients able to report to the outdoor clinic of a hospital or rehabilitation centre should be treated in these institutions. This policy is economically sound since it is known that a therapist is limited to an average of seven to nine home visits per day.

Nevertheless, a fair proportion of patients—particularly with cardiovascular disease—are often discharged from hospitals without having attained the physical capacity to attend outdoor clinics. In such cases, a crucial phase of two to three weeks is essential to reach the physical and psychological stamina indispensable to "face" the first trip to the clinic.

Candidates suitable for home treatment are mothers of small children who cannot be left unattended at home. Finally, a group who otherwise could be followed up in the outdoor clinics are treated at home for various reasons such as inclement weather, an unmanageable number of stairs or the problem of transportation.

Priority should be given to patients with chronic conditions, particularly to those expected to remain at home and classifiable as shut-ins. Daily supervision, at least at the very beginning, is often essential here. In other respects, attendance at a clinic is out of the question because of the fatigue provoked by travelling. It is evident that in such circumstances treatment would defeat its own purpose, for after their journey and the inevitable period of waiting, patients of this group are usually too exhausted to derive any benefit from therapy.

These considerations lead us to discuss the mobile unit and equipment. Whether it is privately owned or sponsored, the principle is the same. Each unit consists of a standard motor vehicle driven by the therapist. No alteration to the car is required; most of the equipment may be carried on the back seat and in the trunk. The equipment could easily be the subject of an independent presentation, but let it be said here that it should be minimal and light. A list of minimum equipment would include: (1) *Electrical appliances:* portable infra-red lamp. (2) *Physiotherapy requirements:* pulleys and cords, sandbags or weights, springs and knee boards. (3) Canes, adjustable crutches, temporary splints and bandages.

A more elaborate unit would consist of portable equipment such as a galvanic-faradic stimulator and short-wave and ultra-sound generators. However, as stated before, the best results are often obtained with "two good hands and initiative"!

Home-made equipment and self-help gadgets play an important role in rehabilitation. The latter are too numerous and variable to discuss here, but dressing and undressing, reading, eating, typing, writing and a multitude of other activities may not only be facilitated but also rendered possible through them. A therapist who has no desire or inclination to become a gadget expert surely should not apply to take charge of a mobile unit.

Daily supervision is often required when treatment is first initiated, but, with the patient's satisfactory progress, the interval between attendances will lengthen. In many instances a monthly or bimonthly follow-up is ample. This procedure would enable the therapist to be responsible for a large number of shut-ins.

Properly selected members of the family may become important auxiliaries. They may be taught how to oversee the exercises and walking re-education and to encourage the patient's participation in the A.D.L. program as instructed by the therapist. Local talent and ingenuity should be judiciously enrolled in setting up improvised facilities and producing self-help gadgets. It always pays dividends to bring the family into the picture with definite responsibilities.

Theoretically the group of patients who may benefit the most from home therapy may include a variety of diagnoses, but the following are apparently most frequently encountered:

1. Cardiovascular group: Hemiplegia, Buerger's disease, arteriosclerosis.

2. Neurological group: Multiple sclerosis and other degenerative diseases of the nervous system, various forms of neuromuscular dystrophy; paraplegia, quadriplegia and Parkinson's disease.

3. Orthopædic group: Various fractures of the lower extremities, particularly of the neck of the femur.

4. Arthritic group: The various chronic and crippling arthropathies.

Again it is emphasized that home therapy and rehabilitation will prove an economical and sound measure as long as chronic or exceptional cases are subjected to treatment. The future is unpredictable, of course, but the need, or at least the number of cases warranting rehabilitation at home,

may decrease with new or improved rehabilitation services in hospitals, the inauguration of rehabilitation centres, more personnel and adequate transportation facilities. One wonders whether the combined thinking and planning of governmental health authorities, voluntary organizations and medical profession should not converge towards the establishment of proper and adequate home rehabilitation services in the rural areas. These services could easily be integrated in the already existing health units. This policy may diminish or at least influence the present migration of a certain category of disabled and handicapped people towards cities. By the same token, it would undoubtedly prevent the eruption of many social and familial problems.

In closing, I would like once more to quote W. Scott Allan: " . . . of greater import to present-day rehabilitation services and those planned for the immediate future are the handicapped persons now homebound who should not be. Discovery of these cases and their referral for proper evaluation and possible treatment by comprehensive or specialized rehabilitation facilities and personnel is the greatest challenge of our day."

SUMMARY

This article deals with the present concept of home rehabilitation; professional training requirements, organizational aspects of these services, and basic principles and practices of home rehabilitation programs are considered.

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RÉSUMÉ

Cet article traite des méthodes contemporaines de réhabilitation à domicile et s'attache au genre de formation professionnelle requise chez les thérapeutes qui travaillent pour les unités mobiles, à l'organisation et à la régie de ces services de même qu'aux méthodes et aux principes fondamentaux de la réhabilitation à domicile. G.G.

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## THE ELDERLY PRIMIPARA*

ROGER J. C. LEGERSKI, M.D.,
*Edmonton, Alta.*

THIS is a statistical review of the elderly primiparas delivered in the Royal Alexandra Maternity Hospital, Edmonton, during a four-year period, 1954 to 1957. Altogether approximately 20,000 infants were delivered during that time. The patients admitted to this hospital are from Edmonton, a city of 300,000 inhabitants, and the surrounding area. Most are white and nearly all are private patients. They have ample opportunity for antenatal care. They are delivered in hospital by their private physicians, who follow up the mother and baby through the post-partum period too. This attending medical staff is made up of general practitioners and certified specialists in gynæcology and obstetrics alike. The Provincial Mortality Committee reviews the pertinent cases.

More and more in recent years it has been shown that the elderly primipara need not present the problems she was considered to present 15 or 20 years ago. The following tables (Tables I-VII) will show the results of work on this unit. An elderly primipara is defined as any woman delivered of her first infant at the age of 35 years and over. Previous abortions do not bar the patients from being included in this category.

The 124 elderly primiparas on record represent an incidence of 0.63% (Table I); one set of twins is included, delivered by low segment Cæsarean section. The average age was 37.5 years; 88.8% of all elderly primiparas were in the age group 35 to 39 years and only 11.2% were 40 years and over. The oldest patient was 45 years of age. The maternal mortality was zero. The perinatal mortality for all deliveries of elderly primiparas during this four-year period was 32.2 per thousand. This compares very favourably with an overall perinatal mortality of 22.9 per thousand for babies delivered to women of all age groups. The four recorded fetal deaths encountered in the deliveries of elderly primiparas were classified by the Provincial Perinatal Mortality Committee as follows:

1. Non-preventable obstetrical death, stillbirth, cause unknown.
2. Preventable obstetrical death: (a) error in technique on physician's part, as the second stage of labour was unduly prolonged; (b) also hospital responsibility for not adequately recording fetal heart.

*From the Royal Alexandra Hospital, Edmonton.

TABLE I.

| | 1954 | 1955 | 1956 | 1957 | 4-year total |
|---|---|---|---|---|---|
| Total number of confinements | 4458 | 4792 | 5048 | 5180 | 19,478 |
| Confinements of primiparas, aged 35 to 39 | 29 | 25 | 28 | 28 | 110 |
| Confinements of primiparas, aged 40 and over | 2 | 2 | 5 | 5 | 14 |
| Percentage of elderly primiparas in confinements | 0.65% | 0.56% | 0.65% | 0.63% | 0.63% |
| Total maternal deaths | 1 | 1 | 0 | 0 | 2 |
| Maternal deaths of elderly primiparas | 0 | 0 | 0 | 0 | 0 |
| Total number of babies delivered | 4511 | 4852 | 5112 | 5227 | 19,702 |
| Total perinatal mortality* per 1000 | 23.9 | 26.1 | 16.4 | 25.8 | 22.9 |
| Perinatal deaths of babies delivered by mothers aged 35 to 39 | 0 | 2 | 1 | 0 | 3 |
| Perinatal deaths of babies delivered by mothers aged 40 and over | 0 | 0 | 1 | 0 | 1 |
| Perinatal mortality for babies delivered by elderly primiparas | | | | | 32.2 |

*Perinatal mortality is defined as including all stillbirths and live births of infants weighing 1000 grams and over, with death on or before their 7th day.

3. Non-preventable obstetrical death, stillbirth, cause unknown.
4. Preventable obstetrical death, physician's error in judgment; patient was pre-eclamptic and two weeks overdue.

### TYPES OF DELIVERY

Of the elderly primiparas 81.5% were delivered vaginally and 18.5% abdominally. In the age group of 40 and over, however, the percentage of abdominal deliveries rose sharply to 35.7%. It is interesting to note that one-fourth of the deliveries were spontaneous. The operative vaginal delivery rate of 46% includes outlet forceps, low forceps, and mid forceps applications. Undoubtedly some of these forceps deliveries were done to facilitate what would have otherwise terminated in a spontaneous delivery. No high forceps were used, and no Kielland forceps. The most commonly used forceps are the Tucker McLean, Haig Ferguson, Simpson and DeWeiss instruments. The four vaginal breech deliveries found in this series were all assisted breech deliveries with application of Piper's forceps to the aftercoming head. The approximately 10% of rotations for occipito-posterior and occipito-transverse positions were modified Scanzoni rotations and extractions whenever the rotation appeared to be not too difficult. Barton's forceps were used in general for more difficult rotations; one manual rotation is recorded and one rotation was done by Simpson forceps alone. The length of labour appears to be longest in the occipito-posterior and occipito-transverse positions, with an average of 21.7 hours. The length of labour in the forceps deliveries averaged 17.1 hours. The spontaneous deliveries show an average of 10 hours of labour, whereas vaginal breech deliveries (8 hours) give the shortest average. The length of labour recorded in the cases of Cæsarean section represented in all cases except one an average trial of labour of approximately 10 hours, and is computed for the nine cases where such a trial was allowed.

TABLE II.—METHODS OF CONFINEMENT

| | 1954 | 1955 | 1956 | 1957 | Total | Total in % | Average length of labour |
|---|---|---|---|---|---|---|---|
| Normal spontaneous delivery, vertex presenting | 10 | 5 | 5 | 10 | 30 | 24% | 10 hours |
| Normal spontaneous breech delivery | 0 | 0 | 0 | 0 | 0 | | |
| Low and mid forceps delivery | 13 | 17 | 15 | 12 | 57 | 46% | 17.1 hours |
| Assisted breech delivery with Piper's forceps to the aftercoming head | 1 | 0 | 0 | 1 | 2 | 1.5% | 8 hours |
| Rotation by forceps or hand | 0 | 2 | 6 | 4 | 12 | 10% | 21.7 hours |
| Cæsarean section | 7 | 3 | 7 | 6 | 23 | 18.5% | 10 hours |

TABLE III.—CÆSAREAN SECTIONS

| | 1954 | 1955 | 1956 | 1957 | 4-year total |
|---|---|---|---|---|---|
| Total number of patients confined | 4458 | 4792 | 5048 | 5180 | 19,478 |
| Total number of patients confined by Cæsarean section | 107 | 103 | 105 | 108 | 423 |
| Expressed as % of all confinements | | | | | 2.1% |
| Number of elderly primiparas confined aged 35 to 39 years | 29 | 25 | 28 | 28 | 110 |
| Number of primiparas aged 35 to 39 confined by Cæsarean section | 6 | 2 | 5 | 5 | 18 |
| Expressed as % of all elderly primiparas, aged 35 to 39 years | | | | | 16.3% |
| Number of elderly primiparas confined, aged 40 years and over | 2 | 2 | 5 | 5 | 14 |
| Number of elderly primiparas aged 40 and over confined by Cæsarean section | 1 | 1 | 2 | 1 | 5 |
| Expressed as % of all elderly primiparas aged 40 years and over | | | | | 35.7% |
| All elderly primiparas have an average section rate of | | | | | 20.1% |

Canad. M. A. J.
June 1, 1959, vol. 80

TABLE IV.—INDICATIONS FOR CÆSAREAN SECTION

| | *Aged 35 to 39 years* | *Aged 40 years and over* | *Total* |
|---|---|---|---|
| Cephalo-pelvic disproportion | 5 | 0 | 5 |
| Toxæmia | 7 | 2 | 9 |
| Myoma | 4 | 3 | 7 |
| Antepartum hæmorrhage | 1 | | 1 |
| Breech disproportion | 4 | 2 | 6 |
| Incoordinate uterine action | 1 | | 1 |
| Non-progressing labour | 2 | 1 | 3 |

## CÆSAREAN SECTIONS (Tables III and IV)

In the four-year period, the incidence of Cæsarean section in all age groups is 2.1%. For all elderly primiparas, it is approximately 10 times that much, and among primiparas aged 40 years and over it rises sharply to 15 times the overall figure, or 35.7%. Twenty-two of the Cæsarean sections reported in the elderly primiparas were low-segment transverse sections. Only one classical section was performed, and one section was followed by hysterectomy. Two sections were accompanied by myomectomy. The indications for section were often multiple. Nearly all patients who underwent Cæsarean section were also x-rayed. The most common indications in order of frequency were: toxæmia, myomata, breech disproportion, and cephalo-pelvic disproportion. The most commonly used type of anæsthesia for section was spinal anæsthesia. Every elderly primipara delivered by Cæsarean section was assessed in writing by an independent consultant before the operation was performed.

## MISCELLANEOUS DATA (Table V)

In Table V, the subsequent confinements are computed only for the first three years, and the rate appears to be relatively high. Figures are limited to these patients who were confined again in the Royal Alexandra Hospital. The sex distribution and average weight of infants are of little significance, if one considers the total of 124 cases.

## MATERNAL COMPLICATIONS (Table VI)

As in other comparable series, the most common maternal complication is pre-eclamptic toxæmia. Other conditions commonly encountered are severe urinary tract infection. The intrapartum complications also show a relatively large number of dystocias due to cephalopelvic and breech-pelvic disproportion. The antepartum hæmorrhages were mostly caused by placenta prævia and accidental hæmorrhage. The lacerations of the vagina were encountered frequently with operative vaginal deliveries. Only two patients suffered from puerperal fever in its true sense, with parametritis and endometritis. All other postpartum pyrexias were due to either chest infections, urinary tract infections or thrombophlebitis. Broad-spectrum antibiotics were used freely. Two postpartum hæmorrhages were found, both due to retained placental tissue; curettage combined with blood transfusion was the treatment for both patients. One hysterectomy was performed after a Cæsarean section; the indication in this case was multiple myomata. One basal-cell carcinoma was found on biopsy of a suspicious lesion on the face.

TABLE V.—MISCELLANEOUS DATA

| | *1954* | *1955* | *1956* | *1957* | *4-year total* | *3-year total* |
|---|---|---|---|---|---|---|
| Number of primiparas confined, aged 35 to 39 | 29 | 25 | 28 | | | 82 |
| Number of subsequent confinements in the same patients | 8 | 9 | 7 | | | 24 (29.2%) |
| Number of primiparas confined, aged 40 and over | 2 | 2 | 5 | | | 9 |
| Number of subsequent confinements in the same patients | 0 | 1 | 1 | | | 2 (22.2%) |
| Number of nursing patients out of all elderly primiparas | 10 | 10 | 12 | 22 | 54 (43.6%) out of 124 elderly primiparas | |

Sex distribution of infants—male 55; female 70.
Average fetal weight, premature infants excluded—male 7 lb. 1 oz.; female 6 lb. 13 oz.; average 6 lb. 15 oz.

TABLE VI.—MATERNAL COMPLICATIONS

| | *Aged 35 to 39* | *Aged 40 and over* | *4-year total* |
|---|---|---|---|
| Mild pre-eclamptic toxæmia | 21 | 3 | 24 |
| Severe pre-eclamptic toxæmia | 12 | 1 | 13 |
| Severe urinary tract infection | 13 | 0 | 13 |
| Myomatous uterus | 4 | 3 | 7 |
| Dystocia and disproportion | 13 | 3 | 16 |
| Incoordinate uterine action | 4 | 1 | 5 |
| Antepartum hæmorrhage | 6 | 0 | 6 |
| Severe laceration of vagina and/or perineum | 8 | 0 | 8 |
| Overdue | 3 | 0 | 3 |
| Thrombophlebitis | 1 | 0 | 1 |
| Postpartum pyrexia | 7 | 1 | 8 |
| Severe anæmia | 3 | 0 | 3 |
| Postpartum endometritis and parametritis | 2 | 0 | 2 |
| Postpartum hæmorrhage | 2 | 0 | 2 |
| Postpartum curettage | 2 | 0 | 2 |

## FETAL COMPLICATIONS (Table VII)

The most commonly found fetal complications were various degrees of intrapartum fetal distress and immediate postpartum asphyxia. The premature infants were all developing satisfactorily, though several of them weighed less than 3½ lb. All infants survived.

TABLE VII.—FETAL COMPLICATIONS

| | 4-year total |
|---|---|
| Intrapartum distress | 3 |
| Mild postpartum asphyxia | 7 |
| Severe postpartum asphyxia | 4 |
| Prematurity | 7 |
| Atelectasis | 1 |
| Malformations of feet | 4 |

SUMMARY

In the Royal Alexandra Maternity Hospital, Edmonton, approximately 20,000 infants were delivered during the four years 1954-1957. Confinements of elderly primiparas, all private patients and all white, numbered 124 (0.63%). This series of 124 elderly primiparas was investigated statistically and showed a maternal mortality rate of zero and a fetal perinatal mortality of 32.2 per thousand. These rates compare very favourably with those in similar reported series.

Approximately one-fourth of these elderly primiparas delivered spontaneously, and one-half had vaginal forceps deliveries, 10% rotations and forceps deliveries, and 20% Cæsarean section. The average length of labour appeared to be longest in the occipito-posterior and occipito-transverse position; the shortest average length of labour was encountered with spontaneous deliveries. The overall Cæsarean section rate for patients in all age groups was 2.1% in this four-year period, whereas the Cæsarean section rate of all elderly primiparas was 20.1%, and this can be considered low. The elderly primiparas of 40 and over had a Cæsarean section rate of 35.7%.

The most common indications for Cæsarean section were toxæmia of pregnancy, myomatous uterus, cephalopelvic disproportion, breech disproportion and non-progressing labour.

Of the elderly primiparas aged 35 to 39, delivered in the three-year period 1954-56, appproximately one-third (29.2%) have had subsequent deliveries. Of the primiparas aged 40 years and over, 22.2% have had subsequent deliveries over the same period.

Of the elderly primiparas confined, 43.6% were nursing their infant at the time of discharge, usually the seventh day. The average fetal weight was 6 lb. 15 oz. (premature babies not considered).

The incidence and distribution of fetal and maternal complications showed no particular difference from those in other reports. The most commonly encountered maternal complications were: mild and severe pre-eclamptic toxæmia, severe urinary infection, myomatous uterus, dystocia and disproportion, antepartum hæmorrhage, and laceration of vagina. Postpartum complications were rare, most commonly postpartum pyrexia of non-genital origin, and only two cases of puerperal fever with endometritis and parametritis. Two postpartum hæmorrhages are on record; both patients were curetted for retained fragments of placental tissue. The most commonly encountered types of fetal morbidity were postpartum asphyxia, prematurity and malformations (all limited to defects of the feet). One case of omphalocele was operated on, and the infant lived beyond that period of time in which perinatal fetal deaths are computed.

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RÉSUMÉ

Environ 20,000 naissances furent comptées à la maternité de l'Hôpital Royal Alexandra d'Edmonton pendant les quatre années de 1954 à 1957. De ce nombre, 124 provenaient des couches de primigestes âgées (0.63%). Toutes ces femmes étaient de race blanche et traitées en clientèle privée. La recoupe des statistiques a montré chez elles une mortalité maternelle de zéro et une mortalité périnatale chez les nourrissons de 32.2 par 1000. Environ 25% de ces femmes accouchèrent spontanément et près de 50% accouchèrent aussi par voies naturelles mais avec l'aide de forceps; chez 10% on appliqua aussi les forceps mais après avoir procédé à une version, et enfin, 20% subirent un césarienne. La plus longue durée moyenne du travail fut dans les positions occipito-iliaque postérieure et occipito-iliaque transverse, et la plus courte dans les accouchements spontanés. La fréquence des césariennes pour le groupe entier comprenant les parturientes de tous âges se chiffre à 2.1%; chez les primigestes âgées elle s'éleva à 20.1% pour atteindre 35.7% dans le groupe de celles de 40 ans et plus.

Les indications les plus fréquentes de césarienne furent la toxémie de la grossesse, les fibromes de l'utérus, le rétrécissement pelvien et l'arrêt du travail. De 1954 à 1956 on a observé que 29.2% des primigestes âgées de 35 à 39 ans ont accouché de nouveau dans cette période de trois ans. Pendant cette même période, 22.2% des primigestes âgées de 40 ans et plus en ont fait autant. A leur congé de l'hôpital 43.6% des primigestes âgées allaitaient leur enfant. Le poids moyen des nourrissons était de 6 lb. 15 oz. ou 3147 g. (prématurés non compris). Les complications les plus fréquentes dans cette série furent la pré-éclampsie, les infections urinaires graves, les fibromes utérins, la dystocie, le rétrécissement pelvien, l'hémorragie ante-partum et les déchirures du vagin. Les complications post-partum furent rares et se limitèrent à des cas de fièvre d'origine non génitale et deux cas de fièvre puerpérale avec endo et para-métrite. Deux hémorragies post-partum exigèrent un curetage des débris placentaires. La morbidité fétale comprit l'asphyxie, la prématurité et les malformations (des pieds seulement). On opéra dans un cas d'omphalocèle, avec survie.

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## PERIODIC HEALTH EXAMINATIONS

"I believe that periodic health-maintenance examinations *are* worthwhile—they should be worthwhile from the point of view of the company that sets them up as part of its executive health program. They should also prove immensely valuable from the viewpoint of medical research. And, of course, they may also achieve their primary aim of maintaining or improving the health of the individual who receives them. I believe that the family physician should encourage them as part of his service to his patients. If, however, they are carried out as part of a company health program, and at the company's expense, it would still be a good idea to have them carried out by the individual's private physician, if at all possible, and if not, to see to it that there is full co-operation between the examining physician or clinic and the patient's private physician."—W. F. Connell: *Occup. Health Rev.*, 10: 7, 1959.

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## LIVING WITH THIRD PARTIES

"Living with Third Parties might not be half as troublesome as trying to live without them. Consider the practice of medicine without the Army, Navy, Air Force, and Public Health Service to guard and protect us; or without our medical schools to teach us; or without our hospitals to work in. Ponder life in complex mid-century American communities without modern health departments. Yet all these are Third Parties, by unilateral declaration of medicine's private practitioners, and interventionists, at least by implication."—M. B. Bethel, *North Carolina M. J.*, 20: 113, 1959.

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# INTRAVENOUS AND ORAL TRIAL OF STILBŒSTROL DIPHOSPHATE IN PROSTATIC CARCINOMA*

J. REID TAYLOR, M.D., *Winnipeg, Man.*

LABORATORY INVESTIGATION[1] has shown that stilbœstrol is an effective cytotoxic agent. This action is independent of œstrogenic properties. It has been further shown that human prostatic phosphatases hydrolyze inactive stilbœstrol diphosphate, with the liberation of free stilbœstrol.[2]

Clinical reports[3-6] were encouraging, and shortly after the introduction of stilbœstrol diphosphate for intravenous administration (Honvol†) in Canada (1956), a clinical trial was decided on. (Since the start of this trial an article[7] has appeared in the Canadian literature.)

## MATERIALS AND METHODS

At first, Honvol was administered to hormone-resistant cases only. Later, previously untreated cases were included. After it became available for oral use, Honvol was used as maintenance therapy in some cases. This clinical trial ran for a period of over two years. Cases were selected from both hospitalized and office patients. Previous experience with stilbœstrol, orchiectomy, and transurethral resection acted as the control.

The indications for treatment were: hormone failure, elevated serum acid phosphatase levels, obstructive symptoms, metastases, otherwise unexplained anæmias, ureteral obstruction, and poor operative result. These were at first limited to cases which had become resistant to oral or intramuscular stilbœstrol. Later, indications were expanded to include those patients with diagnostically elevated serum acid phosphatase and a clinical diagnosis of carcinoma, incomplete bladder neck obstruction, radiographic evidence of bony metastases, myelophthisic anæmias, hydronephrosis due to bladder neck obstruction and poor results after transurethral resection.

Adequate initial dosage was considered to be 5000 mg. given usually as 500 mg. daily for 10 days. Minimum initial dosage was arbitrarily considered to be 3500 mg. over the same period. Administration was by undiluted intravenous injection or by slow intravenous drip in 500 c.c. of 5% glucose in water. Subsequent to this series, 1000 mg. daily has been given by drip for up to 15 days with no increase in unpleasant side effects.

Maintenance dosage varied from 250 mg. intravenously every two weeks up to 500 mg. every other day. Dosage was determined by the severity of the symptoms and the response to treatment. Objective and subjective response was judged by periodic review of the indications for treatment in each case. The only routine check in every case was measurement of the acid and alkaline serum phosphatase levels. Oral maintenance dosage was 300 to 600 mg. daily. This was not given along with the intravenous form in any case. The periods of initial and maintenance dosage in the series are shown in Table I.

TABLE I.—TIME ON DRUG

| | *Satisfactory results (26 cases)* | | | *Poor results* | |
|---|---|---|---|---|---|
| | *Initial dosage* | *Maintenance dosage* | | *Initial dosage* | *Maintenance dosage* |
| R.G.B. | 10 days | 7 months | W.M. | 12 days | Nil |
| H.J.H. | 12 days | Unknown | T.G. | 6 days | 1 month |
| L.M. | 10 days | 2 months | F.G. | 5 days | 1 month |
| A.J.C. | 10 days | 12 months | M.S. | 3 days | Nil |
| W.H.D. | 10 days | 10 months | E. | 4 days | Nil |
| F.W.D. | 10 days | 4 months | J.T. | 3 days | Nil |
| H.W. | 10 days | 10 months | A.D. | 4 days | Nil |
| A.W. | 10 days | 8 months | M.H. | 15 days | Nil |
| T.G. | 10 days | Died of influenza soon after | J.R. | 10 days | Nil |
| J.K. | 7 days | 2 months | A.J. | 6 days | Nil |
| W.D. | 8 days | 8 months | E.M. | 6 days | Nil |
| V.R. | 18 days | 2 months | J.D. | 4 days | Nil |
| W.S. | 7 days | 3 months | L.D. | 8 days | Nil |
| S.D. | 15 days | Unknown | A.J.S. | 4 days | Nil |
| W.B. | 7 days | 15 months | W.K. | 7 days | Nil |
| T.H. | 10 days | 7 months | F.N. | 16 days | 18 months |
| C.S. | 15 days | 7 months | J.K. | 5 days | 6 months |
| H.W. | 10 days | 4 months | A.A. | 10 days | 1 month |
| P.L.F. | 11 days | 12 months | T.C. | 15 days | 3 months |
| S.A. | 10 days | 3 months | C.P. | 13 days | Nil |
| C. | 9 days | Nil | H.A.D. | 30 days | Nil |
| J.O.M. | 12 days | Nil | W.D. | 5 days | 3 months |
| R.C. | 10 days | Nil | | | |
| R.M. | 12 days | Nil | | | |
| F.C. | 27 days | Nil | | | |
| T.W. | 9 days | 1 month | | | |

Maintenance dosage includes both intravenous and oral dosage to the end of the series or to death.

## RESULTS

The two chief signs used in classifying the results as satisfactory and poor were the serum acid phosphatase and hæmoglobin levels, while the two chief symptoms used were bone pain and voiding difficulty. In those cases in which all four factors were present, definite improvement in at least three was taken to indicate a satisfactory result. Cases in which, for instance, severe bone pain was the main or only abnormal factor of the four, were classified as satisfactory only if they were refractory to ordinary stilbœstrol. The remainder were classified as poor results and these included the equivocal results referred to below.

It can be seen from Table II that most of the cases with satisfactory results received over 5000 mg., whereas two-thirds of those with poor results received less than 5000 mg.

Most of the poor results were so classified because of lack of indications, inadequate dosage or poor documentation. Appraisal of some of these records was impossible. Several of the poor-result cases were classified as "equivocal" because clinical improvement was not accompanied by a fall in the serum acid phosphatase or vice versa.

*From the Department of Urology, Winnipeg Clinic, Winnipeg 1, Man.

†Honvol® (stilbœstrol diphosphate) was supplied through the courtesy of Frank W. Horner Ltd.

TABLE II.

| | *Initial dose > 5000 mg.* *Satisfactory* | *Poor* | *Total* |
|---|---|---|---|
| Results | 19 | 7 | 26 |
| | *Initial dose < 5000 mg.* | | *Total* |
| | 7 | 15 | 22 |
| Totals | 26 | 22 | 48 |

Table III shows that, of the patients who had satisfactory results, approximately two-thirds were refractory to previously given stilbœstrol. Almost half (23) of the 48 cases in the series were resistant and of these, only seven had previous orchiectomy. Most of the patients who had had no previous treatment made satisfactory improvement.

TABLE III.

| | *Satisfactory result* | *Poor result* | *Total* |
|---|---|---|---|
| No. of cases | 26 | 22 | 48 |
| Hormone resistant | 16 | 7 | 23 |
| Previous orchiectomy | 4 | 3 | 7 |
| No previous treatment | 10 | 2 | 12 |

It was possible to keep 24 cases on what was considered to be adequate maintenance dosage (intravenous, 5; oral 6; both, 13). Of the 24, 18 were satisfactorily controlled.

All of the patients on adequate oral maintenance dosage (Table IV) had been on stilbœstrol diphosphate for over four months. This period was arbitrarily considered to be adequate. The oral series is too small for evaluation of the effect of previous treatment.

TABLE IV.—ORAL MAINTENANCE—13 CASES

| *Satisfactory result* | *Poor result* |
|---|---|
| 5 cases | 8 cases |
| *No treatment before stilbœstrol diphosphate* | *No treatment before stilbœstrol diphosphate* |
| 1 case | 6 cases |

Side effects were limited to transitory tingling and burning in the perineum and spine. These occurred to some degree in all cases. Several patients with rib metastases and one patient with cranial metastases experienced no discomfort in these areas. Nausea and vomiting were encountered in about one-third of the cases. This was usually controlled by dilution of the drug and administration by intravenous drip. Three patients with a pathological diagnosis of benign hypertrophy noted perineal tingling and burning during and following a single test dose of 250 mg. Neither breast changes nor dermatitis was noted. Oral dosage was well tolerated. Regression of either sclerotic or osteolytic bony metastases was not demonstrated in spite of relief of bone pain. One illustrative case history is summarized below.

## CASE REPORT

R.G.B., aged 73, seen in May 1955, complained of pain in the lower back and right leg, with a painful gait. Rectal examination at this time revealed a hard, fixed prostate. Bone films revealed osteolytic lesions of the pelvis. Serum phosphatase tests were done, but the reports were lost or not recorded.

The patient had undergone a transurethral resection in May 1948 of a clinically suspicious prostate with a tissue diagnosis of benign hypertrophy. At this time the acid phosphatase level was 7.5 units and the radiological survey of bones was negative.

Treatment was started on May 10, 1955. This consisted of stilbœstrol 5 mg. daily, alternated with chlorotrianisene (Tace), one capsule daily. This patient was on either medication at all times up to July 12, 1957.

On October 17, 1955, the prostate gland was softer and the pain was less. The acid phosphatase level was 11.4 and the alkaline phosphatase 6.0 units. Nocturia at this time was very troublesome, and for this reason he underwent a transurethral resection on October 24, 1955. The tissue diagnosis was prostatic carcinoma, grade II.

He was next seen on July 8, 1957, complaining of headache and diplopia. Radiography at this time revealed a destructive osteoblastic lesion of the floor of the sella turcica due to involvement of the sphenoid.

He was considered to be refractory to previous medications and was started on stilbœstrol diphosphate 500 mg. daily on July 12, 1957, and carried on to a total dosage of 4500 mg. At this time the acid phosphatase level was 4.2 and the alkaline phosphatase 6.3. Vision had returned to normal by July 26, and headache had disappeared.

He was next seen on August 27, 1957, there having been no treatment in the interval. On this date, oral stilbœstrol diphosphate, 100 mg. three times a day, was started.

He continued to do well, with normal vision and normal phosphatase values, up to the time he was last seen, on March 24, 1958.

## SUMMARY AND CONCLUSIONS

Forty-eight selected cases were studied over a two-year period to assess the value of stilbœstrol diphosphate in the treatment of carcinoma of the prostate. The results indicate that careful selection is important.

Dosage trials indicated that adequate initial dosage is necessary for good results, especially in refractory cases. Over two-thirds of the poor-result cases received inadequate initial dosage.

Better results were obtained with intravenous maintenance dosage, although oral maintenance was satisfactory in five of 13 cases.

Two-thirds of cases refractory to ordinary stilbœstrol reacted satisfactorily to stilbœstrol diphosphate.

Orchiectomy before stilbœstrol diphosphate treatment was done in too few cases to be a factor in the final assessment.

Anæmias, obstructive symptoms, bone pain and hydronephrosis responded well. Elevated serum acid phosphatase levels fell rapidly.

I am indebted to Dr. H. D. Morse, Dr. C. B. Stewart, Dr. D. Swartz and Dr. J. H. McBeath for permission to use their case histories.

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## RÉSUMÉ

Quarante-huit cas choisis furent suivis pendant une période de deux ans en vue d'établir la valeur du biphosphate de stilbœstrol dans le traitement du cancer de la prostate. Les résultats indiquent qu'il importe de choisir judicieusement les malades avant de procéder à ce genre de thérapie. L'expérience a montré que les bons résultats tiennent à une dose d'attaque suffisante, surtout dans les cas réfractaires. Plus des deux tiers des insuccès relèvent d'une posologie initiale trop faible. Les doses d'entretien administrées oralement donnèrent de bons résultats dans cinq cas sur 13; la voie intraveineuse fut cependant supérieure. Les deux tiers des cas réfractaires au stilbœstrol ordinaire répondirent au biphosphate de stilbœstrol. L'orchidectomie ne fut pas pratiquée assez fréquemment avant l'administration de Honvol (*marque déposée*) pour entrer en jeu dans l'interprétation des résultats. L'anémie, les syndromes mictionnels, les douleurs osseuses et l'hydronéphrose furent favorablement influencés. Le taux de phosphatase acide diminua rapidement.

# HÆMORRHOIDS—THEIR TREATMENT IN THE ACUTE STAGE*

REGINALD ARCHAMBAULT, M.D. and PAUL ARCHAMBAULT, M.D., *Montreal*

THE ACUTE hæmorrhoidal attack remains one of the most dramatic and distressing of all anorectal lesions. The onset is sudden with a painful protrusion which ranges from a simple indurated nodule to a stage of strangulation. Its chief characteristic is the associated thrombophlebitic process involving either the internal or external venous plexus or both.

## ETIOLOGY

The same causes which are apt to bring about vascular thrombosis in other parts of the venous system are present in this condition. Moreover, the anorectal region, by virtue of its function, its muscular mechanism and the abundance of its venous circulation, constitutes an area readily subject to trauma by strain, venous stasis and inflammatory reaction, all of which lead to thrombosis.[1] Hæmorrhoidal thrombosis is, in the majority of cases, a purely local condition. But sometimes it results from a blood dyscrasia[8] or is concomitant with vascular lesions in other areas. Thus, it may be encountered after thrombosis in the legs, mesenteric thrombosis, or coronary thrombosis.

Most authors classify acute hæmorrhoidal attacks into two main categories: (a) thrombosis of external or internal hæmorrhoids by trauma, and (b) the acute attack resulting from thrombophlebitis. From these originate the various descriptions or varieties, e.g. simple thrombus,[1] internal hæmorrhoids which accidentally prolapse and strangulate but are reducible,[8] and irreducible internal prolapsed hæmorrhoidal or strangulated hæmorrhoids.[2] This last type presupposes, in addition to a thrombophlebitis, complete collapse of the supporting tissues,[8, 9] either acute as in the case of childbirth, or chronic in hæmorrhoids of the internal-external type. The strangulation of hæmorrhoids, according to Hibsman and Bacon,[1] results from a thrombophlebitis affecting the inferior hæmorrhoidal veins.

## GENERAL CONSIDERATIONS OF TREATMENT

The treatment of the acute hæmorrhoidal attack must take into consideration the local pathological state, systemic diseases, and remote vascular lesions elsewhere in the body. Treatment must be directed to relieving pain and accelerating regression of the inflammatory reaction.

TABLE I.—GENERAL CHARACTERISTICS
415 PATIENTS TREATED WITH PHENYLBUTAZONE—600 MG. DAILY

| *Results* | *No. of patients* | *%* |
|---|---|---|
| Cessation of pain and regression of condition within 24 hours of onset of therapy. No operation advised: accidental or transitory attack. systemic lesion. remote vascular lesion. | 262 | 63.1 |
| Regression of attack within 24 hours. Operation performed in due time. | 89 | 21.4 |
| Regression of attack within 24 hours. Patients treated with sclerosing injections. | 15 | 3.6 |
| Slight improvement (primary phase: thrombus without infiltration or œdema). Slight analgesic action. | 11 | 2.7 |
| Immediate exeresis of thrombus (primary phase). Phenylbutazone for prophylactic purposes. | 36 | 8.7 |
| Drug not tolerated; gastric disturbances. Medication withdrawn. | 2 | 0.5 |

The effectiveness of the drug is highly enhanced if it is given at the early stage of condition and at effective doses the first day so that saturation level is rapidly reached.[3]

In the case of a simple thrombosis, there need be no hesitation in undertaking immediate exeresis, but this measure is not indicated once the acute phase is over and regression well advanced. In all other cases (although certain authors have no hesitation in recommending immediate surgery) it is preferable to obtain complete resolution of the inflam-

*Read at the Brussels Meeting of the International College of Surgeons, May 1958.

TABLE II.—DETAILED ANALYSIS—415 PATIENTS TREATED WITH PHENYLBUTAZONE—600 MG. DAILY

| *Number of patients* | *%* | *Observation* | *Analgesia* | *Regression* | *Additional results* |
|---|---|---|---|---|---|
| 47 | 11.3 | Primary phase, encapsulated thrombus | Moderate | No effect on thrombus | Rupture of vessels avoided |
| 83 | 20.0 | Secondary phase, encapsulated thrombus, œdema and infiltration | Marked | Disappearance of œdema—persistence of clot | Formation of subsequent skin tags prevented |
| 140 | 33.7 | Terminal phase, thrombus encapsulated or not, infiltration, rupture of vessels | Marked | Disappearance of œdema or floating clot | Absence of new and immediate thrombosis |
| 36 | 8.7 | Reducible internal thrombosis | Very remarkable | Accentuated | Rapid mobilization |
| 109 | 26.3 | Irreducible internal-external thrombosis | Very remarkable | Accentuated | Mobilization in a few days instead of weeks |

matory reaction before suggesting radical treatment, and this for the following reasons: (1) possibility of more accurate analysis of the problem; (2) determination of the need for further treatment after a purely transitory or accidental reaction; (3) danger of operation in the presence of a remote vascular lesion or of a systemic disease; (4) difficulty encountered in performing a good radical resection in the presence of inflammation, œdema and distortion, even when using enzymes; (5) possibility of reactivation in the postoperative stage.

The usual palliative measures still apply: diet, procurement of effortless bowel movement, analgesic ointments, local heat and rest. Many authors consider these therapeutic measures sufficient.[8] But further concern for the patient's welfare has led some to use radiotherapy to relieve pain and reduce the period of immobilization,[5] and infiltrations of various kinds, either paravertebral[2] or local,[7] with or without dispersion enzymes.[10] If, in some cases, results proved to be excellent, their main disadvantage was the inherent danger of these procedures, the numerous sessions and, especially, the fact that these therapeutic methods are not readily available to all.

More recently, the proteolytic enzymes and the corticosteroids have proved efficient weapons in combating inflammation. While admitting the respective values of these various agents or therapeutic methods, further research has led to a simple way of easing both pain and inflammatory reaction.

## TREATMENT OF HÆMORRHOIDAL THROMBOSIS WITH PHENYLBUTAZONE

Phenylbutazone (Butazolidin), a pyrazolidine derivative, possesses recognized analgesic and anti-inflammatory properties. Its value in the treatment of superficial thrombophlebitis of the lower limbs[11, 12] led to a consideration of the parallelism between the latter and thrombosed hæmorrhoids. Studies undertaken with this drug have led not only to more exact knowledge of the product's action but also to a clearer understanding of vascular lesions. The easy accessibility of the anorectum makes it an ideal field for experimentation.

### ETIOLOGY OF VASCULAR LESIONS

The major etiological factor in the production of external thrombosed hæmorrhoids is hæmodynamic. The blood stasis results in intravascular thrombosis followed by phlebitis and periphlebitis (primary phase). This will usually progress to the secondary phase in which there is surrounding infiltration and œdema. Rupture of blood vessels and extravasation (terminal phase) are the end results. In the case of thrombosed internal hæmorrhoids, on the contrary, the phlebitis precedes the thrombosis; infiltration and rupture of blood vessels are immediate reactions. This process is the reverse of the thrombophlebitis of the lower limbs. External hæmorrhoidal thrombosis is similar to deep thrombophlebitis, whereas internal hæmorrhoidal thrombosis is more like superficial or atypical thrombophlebitis.

### ACTION OF PHENYLBUTAZONE

We hesitated before adopting phenylbutazone for the treatment of acute hæmorrhoidal attacks because of the toxicity reported in connection with this drug.[13] However, a careful study of the dosage was made in order to obtain accurate results, and the usual precautions were adopted; namely, taking medication with meals, restricting salt, stopping treatment in cases of gastric disturbance or pronounced œdema, and excluding cases of hypertension or cardiac insufficiency.

A first group of 35 patients were given an oral dose of 400 mg. daily for three days. This first trial produced inadequate analgesia for some and slow remission for others, but results were encouraging enough to embark on a further and more thorough study. After a few progressive trials the dosage was definitely set at 600 mg. a day orally for three days, with a maintenance daily dosage of 300 mg. for the following six days. No appreciable changes were revealed in routine blood counts.

A second group consisting of 415 patients were treated with the drug. Appraisal of its effectiveness was in terms of: (1) regression of local inflammatory reaction and (2) the resulting analgesia. Thorough analysis of these consecutive cases proves the necessity of delaying operation in order to evaluate the condition more accurately.

From these experiments, it is concluded that phenylbutazone:

1. Causes analgesia chiefly by virtue of its anti-inflammatory effect; relief of pain is most pronounced when accompanied by subsidence of significant infiltration and inflammatory reaction.

2. Has no lytic action, since it does not affect the intravascular clot.

3. Acts intercellularly; in this manner, reduces œdema and perivascular infiltration, and avoids skin tags at the site of the thrombosed hæmorrhoids.

4. Prevents phlebitis through its anti-inflammatory action, as demonstrated by the prevention of vascular rupture, and by the absence of new and immediate thrombus formation.

5. Exerts only moderate analgesia in the primary stage. In these cases, it is advantageous to perform an immediate exeresis of the thrombus and to use phenylbutazone as a prophylactic measure.

### POSTOPERATIVE INDICATIONS

These deductions on the actions of phenylbutazone point to a possible postoperative value. When the acute hæmorrhoidal attack has regressed to the point of allowing a surgical operation, which is imperative in certain cases, a reactivation of the thrombophlebitic process is to be feared after the trauma which may result from surgery.

In the postoperative phase of hæmorrhoidectomy, the drug is prescribed in a daily dosage of 600 mg. for a total of 1800 mg. Not only is fresh thrombophlebitis avoided, but a reduction of œdema and secondary infiltration is noted, together with better healing of the wounds. Moreover, the analgesic effect prolonging the action[14] of morphine and codeine, lessens postoperative pain, remarkably often to the point of restricting morphine to one injection only.

The effects are conclusive on all points. Where there is no contraindication, all patients undergoing anorectal operations are given phenylbutazone in the above-mentioned dosage. Since the institution of this therapy, no cases of hæmorrhage have been attributed to the drug in 360 surgical cases. Two cases of œdema and one case of allergy have been noted.

### CONCLUSION

The pain and forced immobilization brought about by attacks of acute hæmorrhoids in many patients have often led to the adoption of drastic and sometimes unwise measures. Phenylbutazone provides a valuable palliative form of therapy in the treatment of the acute attacks, and is a valuable prophylactic agent after anorectal operations. The ease of administration of phenylbutazone and the virtual freedom from side effects in short-term therapy extend its practical use to all the medical profession.


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### RÉSUMÉ

La crise aiguë d'hémorroïdes affecte un grand nombre de personnes. La douleur qu'elle suscite et l'immobilisation forcée qu'elle impose ont souvent contribué aux mesures par trop energiques préconisées à l'encontre de la sagesse. La Butazolidine fournit un palliatif précieux dans le traitement de la crise et un agent prophylactique de valeur dans les suites post-opératoires de la chirurgie anorectale. La facilité de son administration et le contrôle rapide de toute toxicité éventuelle la mettent à la portée de toute la classe médicale.

A. and A.


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### HYPNOSIS IN MEDICINE

"I believe that there is some revival of the use of hypnosis for symptom removal in general practice. As distinct from post-hypnotic suggestion, I would think that there must be great scope in general practice for the use of hypnoidal or just deeply relaxed states, both as a premedication for painful examinations or minor surgery, and as a means of tranquillizing patients with mild anxiety states. The difficulty, of course, is that such procedures take time.

"The place of hypnosis in medicine will necessarily change as we develop greater understanding and better techniques. However, in our present state of knowledge, it would seem, on the one hand, that hypnosis is not sufficiently used in psychiatry, and on the other, that in general medicine there is some tendency to use hypnosis in circumstances which are potentially dangerous to the patient. At the same time, it would seem that there is plenty of scope for the greater use of relaxation and hypnoidal states, which are both simple to induce and safe for the patient."—A. Meares: *M. J. Australia*, 2: 857, 1958.

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### THE OPEN HOSPITAL

"I think perspective in this matter can be restored if it is realized that the whole practice of medicine is permeated with elements of risk which have to be accepted if treatment is to progress. It is only when these risks are accepted that knowledge is spread among the general body of practitioners. A highly skilled surgeon entering a new field exposes his patient to the same type of danger as the humble practitioner who is making himself competent in the ordinary activities of his profession. This is the reason why I personally feel that the principle of the open hospital is a good one. If we as an Association insist upon a policy of open hospitals, we do so because we feel that it would be detrimental to medical science to contemplate the emergence of a large group of medical low-brows or helots fated always to carry out the menial tasks of medicine."—J. H. McLean: *South African M. J.*, 33: 232, 1959.

# TRIMEPRAZINE, A NEW PHENOTHIAZINE DERIVATIVE FOR TREATMENT OF PRURITIC DERMATOSES*

V. PANACCIO, M.D.,† *Montreal*

DURING the past few years many studies have been carried out on the use of tranquillizers in dermatology, because it has been established that a relation exists between nervous tension and certain skin conditions.

Of all the symptoms seen in dermatology, the most important is pruritus, and its relief has always been a very difficult problem. Pruritus, a disagreeable and at times distressing sensation which produces an urge to scratch, manifests itself by itching which generally becomes most severe on undressing and at night.

Scratching gives temporary relief but causes visible lesions known as excoriations which can become secondarily infected. Pruritus frequently causes insomnia which increases the pre-existing emotional stress; for that reason, in the treatment of skin conditions it is necessary to combat this symptom which is liable to aggravate the condition.

The present study deals with the trial of a new drug, the antipruritic and sedative properties of which have attracted attention. It is a new phenothiazine derivative generically known as trimeprazine, and chemically as 10-(3-dimethylamino-2-propyl)-phenothiazine. It occurs as a fine, white, nearly odourless, hygroscopic powder highly sensitive to and easily discoloured by light. It belongs to the same group of compounds as promethazine (Phenergan) and chlorpromazine (Largactil) and has potent neuroleptic and antihistaminic properties. Owing to this combination of properties it has a very broad spectrum of action including sedation of anxiety and emotional disturbances, and antihistamine effects in allergic dermatitis.

## RESULTS

Encouraged by the beneficial results in clinical trials on large groups of patients, both in France[1] and in the United States,[2-6] we administered trimeprazine to 62 patients with various dermatoses, whose most prominent symptom was pruritus.

Table I shows the number of patients treated, the diagnosis of their conditions, and the therapeutic results obtained. Results were classified as follows: *excellent*, for complete relief of itching; *good*, for considerable reduction in itching; *moderate*, when some reduction was obtained, and *none*, if no effect resulted.

TABLE I.—RESULTS

| *Number of patients* | *Diagnosis* | *Excellent* | *Good* | *Moderate* | *None* |
|---|---|---|---|---|---|
| 7 | Chronic eczema | | 7 | | |
| 8 | Urticaria | 3 | 3 | 1 | 1 treatment discontinued |
| 1 | Prurigo | | 1 | | |
| 12 | Contact dermatitis | 3 | 9 | | |
| 5 | Anogenital pruritus | 1 | 3 | 1 | |
| 3 | Neurodermatitis | | | 3 | |
| 1 | Erythroderma | | 1 | | |
| 2 | Lichen planus | 1 | 1 | | |
| 1 | Lichen hypertrophicus | | 1 | | |
| 3 | Dyshidrosis | 2 | 1 | | |
| 2 | Seborrhœic dermatitis | 1 | | 1 | |
| 1 | Herpes zoster | 1 | | | |
| 2 | Psoriasis with pruritus | | 1 | | 1 treatment discontinued |
| 2 | Generalized pruritus without lesions | | | 1 | 1 |
| 1 | Pityriasis rosea | | 1 | | |
| 1 | Duhring's disease (dermatitis herpetiformis) | | | 1 | |
| 52 | | 12 | 29 | 8 | 3 |

Ten of the 62 patients were not seen again by us and two others discontinued the treatment after the first day; these 12 patients are not included in our summary of results. Of the 50 remaining patients, 12 (24%) obtained excellent results, 29 (58%) good results, and 8 (16%) moderate results; 1 (2%) obtained no relief. In brief, the antipruritic effect was remarkably good in 82% of the cases, and in some of the chronic cases, patients are continuing the treatment to this day. In this latter group the antipruritic action was controlled by discontinuing therapy for a certain period; this produced a return of pruritus which was again improved when therapy was resumed. In two patients with urticaria the results were dramatic. One of these patients had been suffering from urticaria for several weeks and had taken various antihistamines, and even steroids, without results. In five days pruritus and the lesions cleared completely. In the other patient, excellent results were obtained in two days. We treated seven patients with chronic eczema considered resistant to the usual therapies. In all these cases we noted

*The trimeprazine used in this study has the registered trademark "Panectyl". It was supplied free of charge by Poulenc Limited, Montreal.

†Department of Dermatology, Hôtel-Dieu de Montréal, Montreal.

Canad. M. A. J.
June 1, 1959, vol. 80

marked relief of pruritus; the patients became calm, and their condition was greatly improved with the return of normal sleep.

It can be stated that the drug has no direct action on the primary lesions but confers benefit by reducing the secondary lesions due to scratching, and by giving the patient a feeling of well-being conducive to improvement of his condition.

Trimeprazine has a potent analgesic effect. We had the opportunity of using it on a single patient with herpes zoster and it had an excellent effect on both pain and eruption. The conclusions of Pellerat[1] as regards this disease are highly significant: the drug "appears to be of interest in the treatment of herpes zoster. On the basis of a limited test (10 patients), this drug seemed to us to have frequently a remarkable analgesic and hypnotic effect and to shorten the duration of the eruption." The only failure occurred in a subicteric patient with generalized pruritus who also had cancer of the pancreas.

### Dosage and Administration

Trimeprazine was administered orally in 5-mg. and 10-mg. tablets. The ideal daily dosage appears to be 5 mg. twice daily after meals and 10 mg. at bedtime, but the dosage can be increased progressively according to the severity of the symptoms and the response of the patient. Some patients have taken up to 80 mg. daily without ill effects.

### Side Effects

The side effect most frequently observed was somnolence. This disappeared after a few days of therapy or with adjustment of dosage. This hypnotic effect is often desirable in predominantly nocturnal conditions. In such cases it is not always necessary to administer the drug in the daytime. One patient discontinued therapy after the first day because he was in a state of excitation and could not sleep.

The other side effects observed were dryness of the mouth, mild lethargy or a feeling of tiredness, and occasional minor gastro-intestinal disturbances. These minor effects did not interfere seriously with the treatment.

### Conclusions

Administration of trimeprazine gave remarkable results in 82% of this series of patients with pruritic conditions.

Side effects were rather minimal with the exception of somnolence which in most cases disappeared spontaneously after a few days of therapy.

The study of these patients with skin diseases is far too limited to permit drawing any definite or general conclusions. We feel justified, however, in concluding that trimeprazine seems to be a valuable adjuvant in the symptomatic treatment of pruritus and of dermatoses of allergic and neuropsychic etiology.

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# TERM LABOUR — ITS FACILITATION BY RELAXIN*
## A PRELIMINARY REPORT

RICHARD X. SANDS, M.D., F.A.C.O.G., F.R.C.O.G. and JAMES H. KO, M.D.,
*New York, N.Y., U.S.A.*

RELAXIN,† a relative newcomer to the endocrine family, has been called the third member of the ovarian hormonal triumvirate.[1] Pommerenke[2] first identified it in the blood of pregnant women and, more recently, it has been found in the serum as early as the 7th-10th week. Its concentration increases gradually, to reach a plateau during the last weeks of pregnancy, and it disappears rapidly after parturition.[3]

Renewed interest in this hormone has been aroused by reports of its efficacy in premature labour,[4, 5] its ability to soften the pregnant cervix,[6-8] its usefulness in the induction of labour in cases with an unfavourable cervix,[9] and its effectiveness in helping to empty the uterus in missed abortion.[10] Since it has been shown that cervical softening expedites the process of parturition,[11] it is noteworthy that the cervices of women treated with relaxin have been found markedly softened[7] and that their labours have frequently been rapid and sometimes precipitate.[6, 8]

In a recent publication it was reported that relaxin produced both cervical softening and perineal relaxation and that when given in combination with oxytocin, by intravenous drip, the duration of labour was shortened to an interval one-half to two-thirds of that obtained with

*From the Department of Obstetrics and Gynecology, St. Luke's Hospital, New York; Woman's Hospital Division.

†Relaxin is most widely known and most easily available as the commercial product Releasin of Warner-Chilcott.

TABLE I.

| *Group* | *No. of patients* | *Route* | *Treatment* | *Remarks* |
|---|---|---|---|---|
| Primi. controls | 34 | | | Total duration of labour 15 hours 59 minutes |
| Multi. controls | 30 | | | Total duration of labour 7 hours 59 minutes |
| A | 25 | I.M. | Relaxin 2 c.c. and 2 c.c. 1 hour later | Total duration of labour 14 hours 53 minutes |
| B | 3 | I.M. | Relaxin 4 c.c. and 4 c.c. 1 hour later | Total duration of labour 19 hours 35 minutes |
| C | 3 | I.V. | Relaxin 2 c.c. in dextrose/water | Total duration of labour 14 hours 39 minutes |
| D | 60 | I.V. | Pitocin 10 units, relaxin 2 c.c. | Total duration of labour 5 hours 59 minutes |
| E | 13 | I.V. | Pitocin | Total duration of labour 10 hours 9 minutes |

oxytocin alone. However, to obtain this result it was specified that the membranes be spontaneously or artificially ruptured, that the cervix be dilated to 3 cm. or more and 75% effaced, and that adequate uterine contractions be present.[12]

In view of the fact that the specifications listed above either facilitate labour or presage an early termination, it was felt that they did not permit a sufficiently clear evaluation of the effect of relaxin. A set of experiments was therefore set up in order to study the effect of the hormone upon the first, second, and third stages of normal spontaneous labour. Relaxin was to be administered as near the onset as possible, when the cervix was no more that 2 cm. dilated and the membranes were intact. The experiments were designed to yield data regarding dosage, the best route of administration, and its effect upon labour when relaxin was used alone or in combination with Pitocin (Table I).

## MATERIAL AND METHOD

The relaxin used (called Releasin) is obtained from sows' ovaries. It was in saline solution, suitable for intramuscular or intravenous administration, and contained 20 mg. of relaxin/c.c. In view of its porcine origin and polypeptide, or protein, nature a strict watch was kept for sensitivity reactions. One patient developed a rash and later confessed an allergy to pork.

A series of 222 patients from both private and clinic practice were divided into a number of groups for study (Table I). They were selected on the basis of parity, minimal degree of cervical dilatation, and integrity of the membranes. As many primigravidæ as possible were chosen. No patient with a history of previous abortion beyond 16 weeks was described as a primigravida and no person with cephalo-pelvic disproportion or suffering from a disease associated with pregnancy was included in the series. Every patient was at term, the onset of labour spontaneous (except in those cases specifically chosen for induction), the cervix 2 cm. dilated, and no case had an artificial amniotomy. Following the usual procedure at the hospital, secobarbital (Seconal) grains 3, was given when the cervix was 2 cm. dilated and meperidine, 100 mg., when the cervix was 5 cm. dilated. The conduct of labour was in no essential respect different from that generally employed in dealing with a normal case. Each case was observed by us throughout labour.

The patients were from 18 to 40 years of age. Of the total number, 131 were primigravidæ, the remainder varying in parity from one to four. They were divided into a number of categories. Two groups, one of 34 primigravidæ and another of 30 multiparæ, were selected as controls and received no treatment other than the mild sedation described above. Twenty-five others were designated as *Group A* and were given an intramuscular injection of relaxin, 2 c.c. (40 mg.) when the cervix was 2 cm. dilated, followed by an additional 2 c.c. one hour later. *Group B* received an intramuscular injection of 4 c.c. followed by another 4 c.c. one hour later. *Group C* were given intravenous medication, 2 c.c. of relaxin dissolved in 500 ml. of dextrose/water and run in at the rate of 40 drops/minute. *Group D* consisting of 60 patients were given an intravenous drip of Pitocin (10 units/500 ml. glucose/water, 6-8 drops/minute) until uterine contractions were well established. When they occurred at intervals of two to three minutes, lasting 40-50 seconds, Pitocin was stopped and relaxin

TABLE II.—GROUP DISTRIBUTION AND DURATION OF LABOUR

| *Group* | *Total cases* | $P_0$ | $P_1$ | $P_2$ | $P_3$ | *1st stage* | *2nd stage* | *3rd stage* | *Weight* |
|---|---|---|---|---|---|---|---|---|---|
| Controls | 34 | 34 | | | | *14 hr. 42 min. | 1 hr. 12 min. | 5 min. | 3220 g. |
| Controls | 30 | | 30 | | | 7 hr. 22 min. | 34 min. | 3 min. | 3486 |
| A | 25 | 25 | | | | 13 hr. 52 min. | 55 min. | 6 min. | 3172 |
| B | 3 | 3 | | | | 18 hr. | 1 hr. 22 min. | 13 min. | 2848 |
| C | 3 | 3 | | | | 13 hr. 45 min. | 50 min. | 4 min. | 3307 |
| D | 60 | | | | | *5 hr. 9 min. | 45 min. | 5 min. | 3245 |
| | | 37 | | | | 5 hr. 53 min. | 55 min. | 5 min. | 3244 |
| | | | 12 | | | 4 hr. 37 min. | 33 min. | 6 min. | 3833 |
| | | | | 7 | | 2 hr. 49 min. | 23 min. | 6 min. | 3019 |
| | | | | | 4 | 2 hr. 15 min. | 16 min. | 7 min. | 2967 |
| E | 13 | | | | | *9 hr. 14 min. | 45 min. | 10 min. | 3172 |
| | | 7 | | | | 11 hr. 53 min. | 57 min. | 9 min. | 2922 |
| | | | 6 | | | 6 hr. 46 min. | 36 min. | 17 min. | 3543 |

Canad. M. A. J.
June 1, 1959, vol. 80

(2 c.c./500 ml. dextrose/water) was run in, via the Y tube, at the rate of 20-40 drops/minute. *Group E* were designed to act as controls for group D and were stimulated with Pitocin alone, throughout the entire labour.

Another group of 54 patients were selected for induction of labour, 34 with a combination of Pitocin and relaxin and the remainder with Pitocin alone, in order to act as controls. A double tube arrangement was used so that the two drugs could be given alone or together, as desired. When both were used, the Pitocin was started first (10 units/500 ml. dextrose/water, 6-8 drops/min.) and continued until the uterus was contracting every three or four minutes. At this point relaxin was introduced (2 c.c./500 ml. dextrose/water) and the combination continued throughout labour. When Pitocin was employed alone, the technique was similar, the only difference being that one bottle contained nothing but dextrose/water. This method was in contrast to that used in group D in which Pitocin was stopped when relaxin was started.

## RESULTS

### *Induction of Labour*

Of the cases induced by the Pitocin-relaxin technique described, 70.6% were successful. Most of these patients were multiparæ and had a comparatively rapid labour. Only 60% of those induced by means of Pitocin alone were successful and since the great majority of these were multiparæ as well, it was not surprising that they also had a relatively rapid labour.

### *Duration of Labour*

The total duration of labour in the primigravid control group was 15 hr. 59 min., well within the accepted average for this type of patient. The time distribution in the individual cases is shown in Fig. 1. The first stage lasted 14 hr. 42 min., the second stage 1 hr. 12 min., and the third stage 5 min. Total duration of labour for the multiparous control group was 7 hr. 59 min., divided as follows: first stage 7 hr. 22 min., second stage 34 min., third stage 3 min., all within the accepted mean duration. The average weight of the babies was over 3000 grams.

Group A. These patients, 25 primigravidæ, received relaxin intramuscularly and provided some interesting information. The most constant finding was marked relaxation of the perineum, which became soft and easily distensible, so much so that in some instances a degree of rectal eversion was noticeable at the anus. Even more striking was the fact that, regardless of the degree of cervical dilatation, once uterine contractions had become frequent and forceful the labour progressed smoothly after relaxin, the first stage lasting an average of 50 minutes less than in the control group. In addition, the patients were much more co-operative and appeared to "bear their labour" much better than those in the control group. Since all of these women were primigravidæ, this feature was very striking.

On the other hand, regardless of the degree of cervical dilatation, if uterine contractions were not well established the administration of relaxin appeared to alter the pattern of labour. Within less than an hour after administration of the hormone, the contractions became weaker and less forceful and appeared absent in the area of the lower uterine segment. The entire course of labour assumed a rather desultory character. However, the uterus remained sensitive to Pitocin and could easily be stimulated to contract. Since this occurred so soon after the relaxin was given, we feel that there is a cause and effect relationship and it would appear better to administer relaxin when labour is well established.

Group B consisted of three primigravidæ. The dose of relaxin was doubled (4 c.c. followed by 4 c.c. one hour later) in order to determine whether there was a quantitative factor which might influence the above results. The patients in this group were not having strong and forceful contractions and it quickly became apparent that it was the inhibitory effect of the hormone which was being manifested. The first stage lasted 18 hours.

Group C also consisted of three primigravidæ. In order to study the avenue of administration as a factor, the same dose was given to these patients as to those in group A, 2 c.c., but by intravenous drip. In this small group the duration of the first stage was 13 hr. 45 min.

Group D. It seemed necessary that frequent and forceful uterine contractions be established before exhibiting relaxin. All these patients (37 primigravidæ and 23 multiparæ) were therefore started on a Pitocin drip which was stopped and then followed by relaxin only when frequent and forceful contractions were present. Under these circumstances it was found that 2 c.c. of the hormone, started at the time mentioned, resulted in a shortened first, second and third stage. The total duration of labour for each primigravida is shown in Fig. 1. In addition, the duration of the first and second stages was inversely proportional to parity. Many patients in this group had practically no second stage at all. We soon learned that frequent rectal examination was necessary in order to detect full dilatation soon enough to get the patient to the delivery room in time.

Group E. This group acted as a control for Group D. Although Pitocin given alone, throughout labour, served to shorten the duration of the first stage appreciably, it did not do this to the same extent as the combination of Pitocin and relaxin. The actual duration of labour for each case in this group is shown in Fig. 1.

Once again, it is felt essential to stress the behaviour of the primigravidæ in Groups A and D. They were much more co-operative than was expected and, if one might use the phrase, almost enjoyed their labour. It is felt that relaxin acted

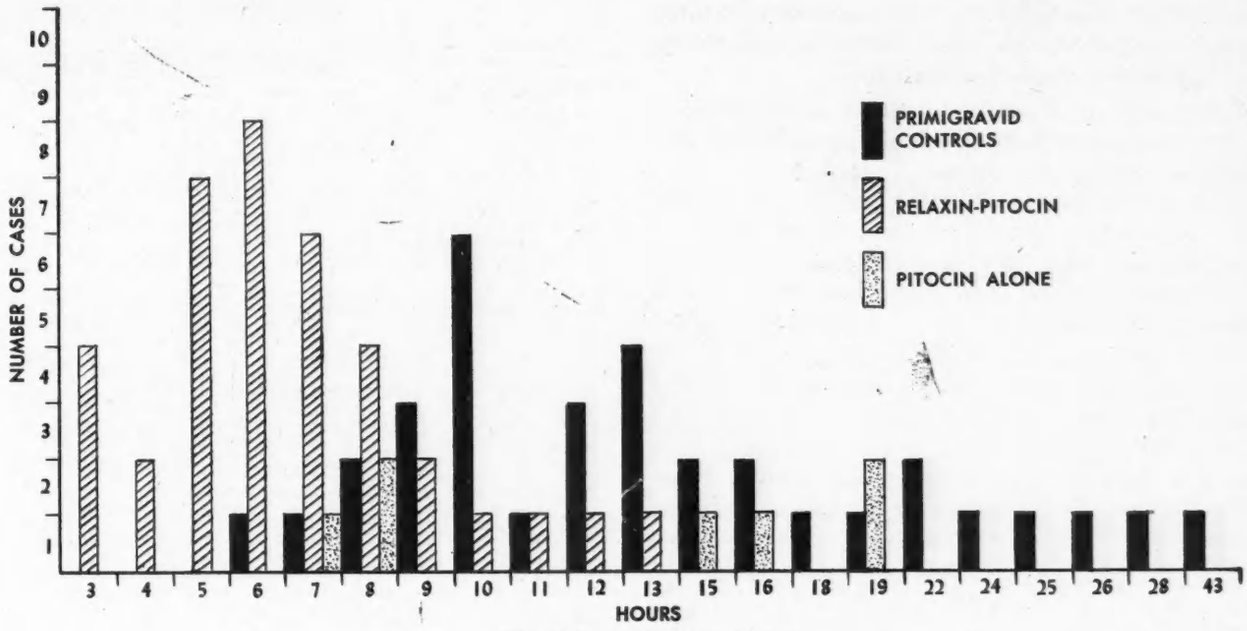


Fig. 1.

as a uterine anodyne. Furthermore, when oxytocics are used to modify labour, cervical laceration is fairly common, approximately 6%. Since Pitocin was used in so many of these cases, it was gratifying to find that the incidence of cervical laceration in our series was just under 3.5%. It is felt that this is probably due to the softening effect of relaxin upon the cervix.

## DISCUSSION

The results of a number of studies in large animals such as the cow and the pig show that relaxin brings about relaxation of the cervix and also markedly increases the ease of cervical dilatation.[13-15] Histological examination of the cervices of these treated animals shows there is an increased permeability, depolymerization of the ground substance, greater imbibition of fluid (in the rat from a normal of 80% to 85.3%), and a twofold increase of myometrial nitrogen and glycogen.[16] More recently, Hisaw[17] demonstrated an increase of endometrial thickness in the castrated monkey after treatment with a combination of œstradiol, progesterone, and relaxin, a change which failed to occur when relaxin was omitted. Furthermore, Boucek[18] by means of his sponge biopsies and Casten[19] by his work in scleroderma have shown that, in essence, relaxin reverses the aging processes in connective tissue. One may recall the fact that the cervix contains a large amount of connective tissue. In addition, relaxation of the connective tissue joints of the human pelvis during pregnancy is now generally accepted as due to relaxin.

The above experiments, amongst a host of others, indicate that relaxin does have physiological activity. However, not all results have been positive,[20-22] and it is very likely that we still do not know how to use the hormone properly. The fact that, recently, activity has been reported when it was given either rectally or by mouth[1] is a case in point. For a very long time it had been assumed that it was completely destroyed in the gastro-intestinal tract because of its polypeptide nature.

Many of the patients included in this series (C. T. Javert's cases) had had subfertility problems, and a number of these women became pregnant after the simple operation of cervical dilatation. As the result of past experience it was expected that difficulties such as cervical dystocia might be encountered during the conduct of these labours. However, it was gratifying to find that these fears did not materialize. On the contrary, labour was generally uneventful and it is felt that relaxin was largely responsible for the ease experienced in dealing with these problem cases.

We feel that the results of our experiments show that relaxin has an effect upon the duration of labour. To obtain more than a clinical impression, the data of both the control and relaxin-treated primigravidæ were statistically analyzed, but in order that the mathematical picture would be more fully complete we also included the small number of primigravidæ whose labours were stimulated by Pitocin alone in our analysis. The average duration of labour for the relaxin-Pitocin treated primigravidæ was 6 hr. 53 min., with a standard deviation of 3 hr. 5 min. The average duration for the primigravid controls was 15 hr. 59 min., with a standard deviation of 8 hr. 54 min., while the average duration for those cases treated with Pitocin alone was 12 hr. 59 min., with a standard deviation of 5 hr. 26 min.

Using the "t" test method, a method of statistical analysis suitable when groups contain variable numbers (34, 37 and 7), we found that there was no significant difference between the Pitocin-treated cases and the controls. On the other hand, when the

Canad. M. A. J.
June 1, 1959, vol. 80

duration of labour of the relaxin-Pitocin treated cases is compared with that of the other two groups the difference is highly significant.

Is this due to an action upon the uterus itself or to the softening effect of relaxin upon the cervix? Internal tocometric studies,[23] the reports of a number of observers studying premature labour, and our own observations indicate that any effect which relaxin may have upon uterine contractions is inhibitory. On the other hand, clinicians experienced in the use of relaxin have observed marked cervical softening, a feature resulting in all likelihood from a physiological alteration in the cervical connective tissue, probably an increased imbibition of fluid. This can occur within a short time and it is more likely to be the mechanism of cervical softening than a histological alteration in the tissue.

This softening of the cervix can easily be responsible for the increased productivity of the uterine contractions. When these contractions are further strengthened by Pitocin they become even more productive, with a resulting shortened total duration of labour. This was amply demonstrated by the results obtained in Group D when contractions were stimulated by Pitocin.

The fact that labour is inhibited by relaxin when uterine contractions are weak, and that when they are strong the hormone appears to make them even more productive, suggests that there may be a mechanical critical point. This is probably forcefulness and frequency of uterine contractions. To one side of this relaxin acts as an inhibitor and to the other side as an accelerator. This double action is a frequently encountered physiological phenomenon.

## SUMMARY

A series of 222 patients, at term, were studied in order to determine the effect of relaxin upon the duration of labour.

It was found that when uterine contractions are not frequent and forceful, relaxin will exhibit an inhibitory effect upon the pattern of labour.

When the contractions are strengthened by Pitocin, then relaxin will help shorten the average duration of the first stage to five hours in contrast to nine hours when Pitocin alone is used and almost 15 hours when neither is used.

The effects upon labour of the relaxin-Pitocin technique described have been statistically analyzed and found to be highly significant.

A hypothesis is advanced in an attempt to explain a seemingly double action of the hormone.

We are grateful to Carl T. Javert, M.D., Director of the Woman's Hospital, for his valued assistance and for permission to include a number of his relaxin-treated cases in our series. Acknowledgment is also made to the Charles and Irene Simon Fund of the Well Born Foundation for help in completing this work.

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1212 Fifth Ave.,
New York City.

## RÉSUMÉ

L'effet de la relaxine sur la durée du travail fut étudié chez 125 parturientes. On observa que dans les cas où les contractions utérines étaient rares et faibles la relaxine exerçait une action inhibitrice sur le travail, et quand ces contractions étaient stimulées par la pitocine, la relaxine réduisait la durée moyenne du premier stage à cinq heures au lieu des neuf heures requises lorsque la pitocine est employée seule ou des quinze heures lorsqu'on n'a recours à aucun médicament. L'analyse statistique des résultats obtenus par l'emploi de la technique relaxine-pitocine, a confirmé la valeur de cette combinaison. La relaxine semble favoriser l'amollissement du col par imbibition. Il n'est pas impossible qu'il existe un point critique dans la mécanique de son action en-deça duquel elle freine les contractions utérines et au-delà duquel elle les renforce.

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## CHINESE MEDICINE MARCHES ON

"Countless cases have proved that many diseases which are considered throughout the world as difficult to treat and of which the cure rate is not high can be treated successfully by traditional Chinese medicine. These include hypertension, rheumatic diseases, liver cirrhosis, chronic nephritis, diabetes mellitus, infantile paralysis, and optic atrophy. Some of the outstanding achievements in traditional Chinese medicine are: treatment of fractured bones with willow twigs, curing of certain types of color-blindness, cure of acute appendicitis without operation, use of acupuncture to cure the deaf and the dumb, and treatment of snake bites with a cure rate of 100%. These have never or rarely been heard of in the world. The diagnosis and treatment of fulminating dysentery, biliary ascariasis, etc.; the generally lower mortality rates for major operations on the chest, abdomen, and brain than in capitalist countries; the success in the clinical use of the Chinese-made artificial heart and lungs and the countless other new methods of treatment, new techniques, new machines and new apparatuses—all these have reached or surpassed international levels."—*Chinese M. J.*, 78: 1, 1959.

Canad. M. A. J.
June 1, 1959, vol. 80



# Case Reports

## THE INHERITANCE OF DIABETES MELLITUS*

G. S. BALFOUR, M.D., F.R.C.P.[C],
*Lethbridge, Alta.*

THIS CASE REPORT is presented in order to record the appearance of five cases of juvenile diabetes mellitus in one family, and to look into the current status of generally accepted belief about the inheritance of diabetes.

### FAMILY CASE REPORT

The family under consideration consists of the parents and their five children. They are of Scandinavian stock, and migrated to Alberta from Minnesota. The parents are of about normal intelligence, and have spent their lives working hard on their two or three widely separated, marginal farms.

The father, born in 1895, has a peptic ulcer, but no other illnesses. Late in 1958, he submitted to a glucose tolerance test as an out-patient. The test showed a normal type of curve, and no glycosuria. It was impossible to repeat this test with any modification.

The mother, born in 1898, has pernicious anæmia, but has never shown glycosuria. Through the courtesy of her own physician, a standard glucose tolerance test was carried out in late 1958. The results are as follows:

| | *Blood sugar (mg. %)* | *Urine sugar* |
|---|---|---|
| Fasting | 95 | 0 |
| 1/2 hour after 100 grams of glucose orally | 200 | 0 |
| 1 hour " | 228 | 0 |
| 1½ hours " | 126 | 0 |
| 2 hours " | 108 | 0 |
| 3 hours " | 56 | 0 |

It is evident that the high renal threshold (if that term may be excused) obscures what would otherwise be a mild case of diabetes mellitus.

The family of this couple consisted of five children, as shown in Fig. 1. There were no other pregnancies. There is no known consanguinity between the parents. The mother had severe vomiting during the first trimester with each child, and each delivery was difficult and lengthy. The babies were all born at home, and all weighed about 8 lb. All nursed and gained weight well, and progressed uneventfully through the usual childhood diseases, with the exception of the first child.

The first child, a girl (A), was born in 1920. After she began to walk, there is a definite history of marked polydipsia. The mother recalls her fears that the child would fall into the watering trough, as she made frequent trips there to obtain extra drinks of water. The child was also well known for her habit of asking visitors to give her water from the water-barrel. About the age of two, she developed vomiting, lapsed into coma, and died in the small village hospital where she was taken. The diagnosis of diabetes was not made at this time, and the mother recalls that death was attributed to some form of pneumonia. She is certain that the child was afebrile during the first day or two of the illness. She remembers that the mode of death strikingly resembled that of her own infant sister only four years previously. I believe it is fair in retrospect to presume that this child had diabetes.

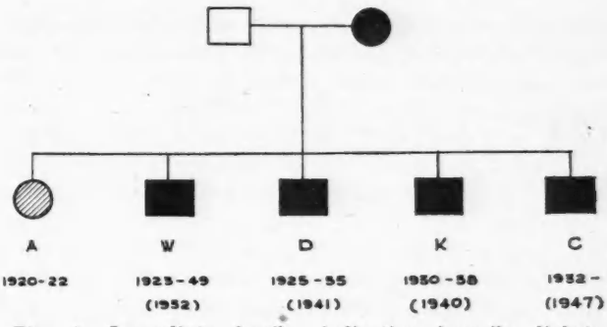


Fig. 1.—Immediate family, indicating juvenile diabetes mellitus.

The case histories of the four boys now follow. These boys grew up under the same hard conditions, working on the farms from the time they were old enough. No allowance seems to have been made for their diabetes. As they grew older, they would take their own insulin before breakfast, and often drive several miles in a truck to a different farm to work. Lunch was eaten whenever convenient, and they usually drove home at dusk for dinner. Under these circumstances control of the diabetes was negligible: urinalyses were claimed to be done only as "often" as once every two or three weeks, the diet was completely *ad lib.*, the amount of exertion each day varied tremendously, and hygiene was primitive. They made very infrequent visits to any particular physician. It is known that there were many admissions for furuncles, insulin shock or diabetic coma, but it is impossible to document these.

The oldest boy (W) was born in 1923. His diabetes was diagnosed in 1932 (the figure given in parentheses in Fig. 1), and he died in 1949. The insulin requirement in the last few years of his life was 20-30 units daily.

The third child (D) was born in 1925. He discovered his own diabetes in 1941, when experimenting with his brother's Benedict's solution. I first saw him in 1951, for furunculosis, and he then required 45 units of insulin daily. He was well developed and nourished, and had early lens opacities. He responded well to therapy for the furunculosis but did not return until 1955. He was then brought in moribund, and died of overwhelming infection of the entire urinary tract. He had urinary retention with overflow, absent knee and ankle reflexes, loss of temperature sense over the lower trunk and legs, renal calculus, and widespread boils and skin abscesses. Autopsy showed, in addition to this, widespread destruction of the islets of Langerhans.

The fourth child (K) was born in 1930. He also discovered his own glycosuria about 1940. In 1941, he required 20 units of insulin and by 1957 was taking 60 units daily, of varying types or mixtures. In 1957, when I first saw him, he had hypertension, renal in-

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Canad. M. A. J.
June 1, 1959, vol. 80

sufficiency, early bilateral central cataracts, and hæmorrhages and retinitis proliferans in both fundi. His skin was badly scarred from innumerable boils. He had three hospital admissions in 1957 for pulmonary œdema and ascites, and died early in 1958 in uræmia. Autopsy confirmed the presence of chronic glomerulonephritis and changes in the pancreas compatible with diabetes.

The fifth child (C) is the only surviving child. He also discovered his own glycosuria, in 1947. I first saw him in 1956, when he was on 30 units of insulin daily, and showed albuminuria, hypertension and early cataract formation. He has required many hospital admissions for pulmonary œdema and renal insufficiency. At present his blood pressure is 190/120 mm. Hg, he shows an elevated serum non-protein nitrogen, and he is completely blind. He requires 30 units of insulin daily, digitalis, diuretics and a low-salt diet.

### FAMILY HISTORY OF DIABETES MELLITUS

The parents have provided the fairly extensive family history relative to diabetes which is shown in Fig. 2. There is no known diabetes on the father's side. There were twins who died at birth, and one child was burned to death at the age of one. The other four siblings lived to at least middle age without diabetes.

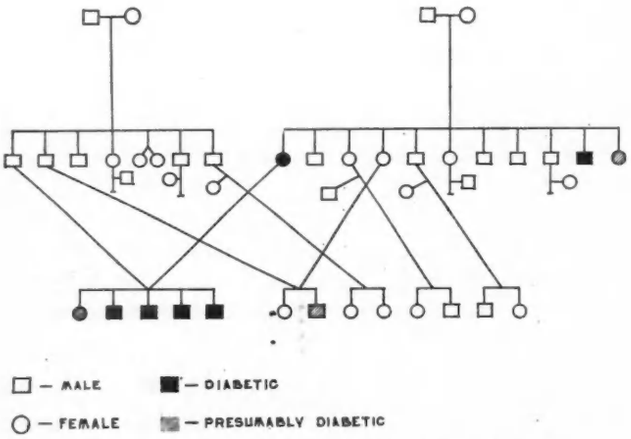


Fig. 2.—Family history of diabetes mellitus.

The diabetes showed itself on the mother's side in her (by hyperglycæmia only) and in her two youngest siblings. The youngest died in 1918, at the age of 2, after showing excessive thirst similar to that of the first child in the family under consideration. Another, a boy, was born in 1912, and died of some complication of diabetes in another province about 10 years ago. He was single.

Another marriage between these families, as indicated in Fig. 2, has produced one son who had glycosuria on at least one occasion, but his current status is not known.

A survey of this family history is disappointing. If diabetes is indeed inherited as a simple Mendelian recessive, five juvenile diabetics in one family is at least very unusual. Ideally, glucose tolerance tests should be carried out on the entire family, but the latter are too widely dispersed. There is also a fairly large number of barren marriages.

The genetic aspects of diabetes mellitus will now be considered.

### GENETIC CONSIDERATIONS IN DIABETES MELLITUS

It seems generally accepted by all authors that there is a large hereditary factor in diabetes. Studies by Pincus and White in 1933[1] were the first of many such, most of which conclude that susceptibility to diabetes is probably determined by a recessive gene. However, as Steinberg[2] points out, this hypothesis does not explain the great variations in both age at onset and the clinical severity of the disease. Neither clinical nor genetic data have helped to resolve this problem. A brief discussion of these difficulties seems warranted.

The first difficulty is penetrance. The degree of penetrance reduces the incidence of the clinical disease in those who are genetically susceptible. As an example, Reed[3] points out that, even in identical twin pairs, where one twin is found to be diabetic, the clinical disease does not appear in the other twin in one-third of the pairs, because of environmental or other unknown factors. The penetrance of diabetes in the general population seems to be about 20%.

Another difficulty is that diabetes may be a collection of disorders, all caused by enzyme deficiencies at various stages in the metabolism of glucose. Recent research reveals that many varied types of disease are in fact all due to hereditary defects at various single enzyme levels in carbohydrate metabolism. As there is still doubt about the precise site of action of the defect in diabetes, it is possible that the clinical expression of diabetes could still depend on inheritance through multiple genes.

Any hope of locating a particular gene for diabetes remains very remote. It is now known that genes are highly specific nucleoproteins, aligned in a regular order along the length of specific chromosomes. Snyder,[4] in a very interesting and authoritative survey, notes the close association between biochemistry and genetics. He states that "many enzyme dysfunctions are indeed referable to specific mutant genes". He also presumes that "the production of normal enzymes is dependent on the activity of the normal unmutated alleles of these mutant genes". He refers to the many diseases in which a hereditary defect in the function of a single enzyme is now known to account for the clinical picture of the entire disease. He further anticipates that, ultimately, in the whole enzyme pattern of man's entire metabolism, each single enzyme will become identifiable in terms of the activity of a single specific gene.

Mapping of these various genes is extremely difficult. Locating the genes on the appropriate chromosome, even in such an ideal laboratory tool as Drosophila, the fruit fly, with its four chromosomes, has not yet yielded knowledge of the site of any

genes related to carbohydrate metabolism, despite many years of intensive research.

Mapping of genes on the 48 chromosomes in man has been done only to a very limited extent. Stern[5] makes a conservative estimate that there are about 1000 genes residing in or on each chromosome, or a total of 24,000 pairs of genes in man. Of these, only a few which happen to be sex-linked and thus easier to locate are mapped at present.

Another interesting problem is the frequency of diabetes, when compared with the marked rarity of most other hereditary diseases, particularly those which impair health and reproduction. Steinberg[2] and others agree that those with a tendency to develop diabetes are probably homozygous for the recessive gene d. This includes about 5% of the population of the United States. It is estimated that one-fifth of these are known diabetics, one-fifth are undetected diabetics, and three-fifths are genetically liable to develop diabetes. One might well wonder how a disease which, at least prior to 1922, carried such a high survivor penalty, could be so widely prevalent. Post and White[6] find evidence that the recessive genotype for diabetes may confer a reproductive advantage over the normal. Their data suggest that girls having the diabetic genotype mature sexually a little earlier than normal, provided that their diabetes does not become manifest till at least two years after the onset of menstruation. Therefore, in a primitive society at least, the inherited diabetic tendency might confer a slight reproductive advantage.

The attempt to find the diabetic genotype before it becomes manifest clinically or genetically is seemingly meeting with success. In 1954, Fajans and Conn[7] published their first work on the cortisone modification of the glucose tolerance test. They use the diabetogenic effect of cortisone to put extra stress upon the blood-sugar regulating mechanism during a glucose tolerance test. Fajans reports that a decrease in glucose tolerance after cortisone occurs 12 times more commonly among relatives of diabetics than among controls. He further reports[8] that in three years, six such persons with abnormal cortisone-modified glucose tolerance curves have developed frank or borderline diabetes.

Thus it appears that this test may enable one to find some persons genetically likely to develop diabetes, at some time before their disease becomes manifest.

SUMMARY

A family containing five juvenile diabetic siblings is presented.

Various reasons are given for the failure of clinical and genetic data to agree well in the inheritance of diabetes.

The cortisone-modified glucose tolerance test appears to be a useful tool in the clinical and genetic study of diabetes.

We are reminded that the relatives of known diabetics should be a fruitful area of search for undetected diabetes.

I should like to acknowledge the help of Dr. Margaret W. Thompson, Genetics Clinic, University of Alberta Hospital, Edmonton, Alberta, and of Drs. Ruby Larson and M. D. MacDonald of the Science Service Laboratory, Lethbridge, Alberta.

ADDENDUM

The fifth child, C, died on February 19, 1959, in uræmia. Autopsy permission was not granted.

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The Campbell Clinic,
430 Mayor Magrath Drive,
Lethbridge, Alta.

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# PNEUMATOSIS CYSTOIDES INTESTINALIS
## A REPORT OF TWO CASES IN INFANTS*

WILLIAM L. PARKER, L.R.C.P.& S.(Edin.)
and JAMES HENDRY, M.B., Ch.B., D.P.H.,
*Winnipeg, Man.*

PNEUMATOSIS cystoides intestinalis is a condition characterized by the finding of gas cysts within the wall of the bowel and often within the bowel mesentery and regional nodes. The first case reported here is of interest since the diagnosis was made during life by the radiologist and air was possibly present within the liver on x-ray examination.

CASE 1.—This female infant was born at term after a normal pregnancy and labour. The birth weight was 7 lb. 14 oz. She was breast-fed for one week and then given a milk formula. When she was three weeks old, projectile vomiting commenced and persisted until she was admitted to hospital at the age of one month.

On admission her weight was 8 lb. 12 oz., and she took her feedings eagerly but vomited quite frequently. Gastric peristalsis was not seen and a pyloric tumour could not be palpated. It was considered that the infant was suffering from a feeding problem and she was discharged improved.

The infant was readmitted one week later, still having quite marked episodes of post-prandial vomiting. In addition to this, she had passed several watery stools and had one convulsion just before admission. The baby was only moderately dehydrated but was listless to the point of being almost stuporous. There

*From the Pathological Department, The Children's Hospital, Winnipeg, Manitoba.

Canad. M. A. J.
June 1, 1959, vol. 80

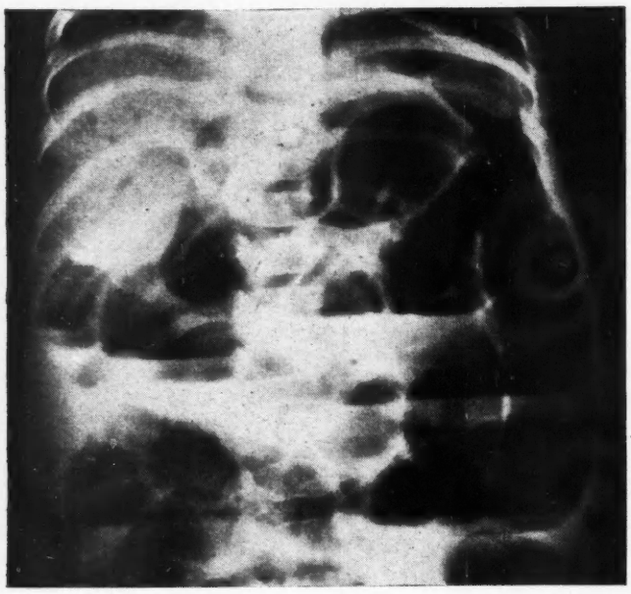


Fig. 1.—Straight radiograph of abdomen showing distended loops of bowel with a double-contoured wall and patchy opacities in the liver region.

was an intermittent type of pyrexia. The abdomen showed some peristaltic waves in its upper half, but it was not distended and no abdominal tumour could be palpated. The dehydration was corrected but the infant remained listless and continued to vomit after feedings. A barium meal showed delayed emptying of the stomach with an elongation and narrowing of the pyloric canal suggestive of a pyloric stenosis.

Twelve hours before death there was marked distension of the abdomen, cyanosis and dyspnœa. There was interstitial emphysema of the anterior chest wall, and no bowel sounds were audible in any quadrant of the abdomen. A radiograph of the abdomen revealed markedly distended gas-filled loops of small bowel (Fig. 1). It was noted in the radiologist's report that there was a double contour line of air along the margin of the cæcum, and a suggestion of some gas either in or overlying the liver.

Because of these findings a diagnosis of pneumatosis cystoides intestinalis was made.

*Autopsy Findings*

The body was that of an emaciated white female infant, possessing the normal body measurements for her age of seven weeks.

The abdomen was protuberant and tympanitic. There were no other external abnormalities of note. The pertinent pathological findings were confined entirely to the abdomen.

*Peritoneum.*— Twenty c.c. of moderately viscid, light red, clear fluid was present in the peritoneal cavity. The two layers of the peritoneum were pale, smooth and glistening.

*Gastro-intestinal tract.*—Loops of gas-distended small bowel pushed through the peritoneum when it was incised. The wall of the stomach was hypertrophied and thickened. The pylorus was quite firm. The muscular layer measured 0.5 cm. in thickness, and was translucent white and somewhat resembled cartilage (Fig. 2). The circumference of the opened pylorus was 1.4 cm., the duodenum 3.5 cm. Changes in the bowel were most marked in the terminal ileum, less in the jejunum, and least in the large bowel. In the

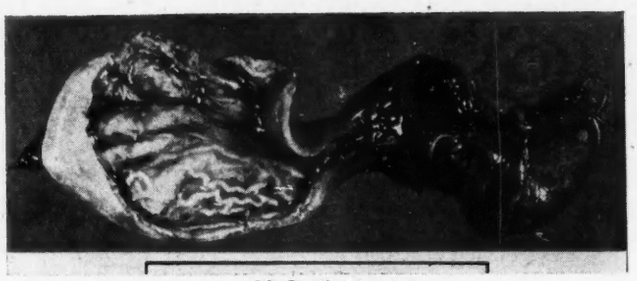



Fig. 2.—Shows stomach and thickened pylorus.

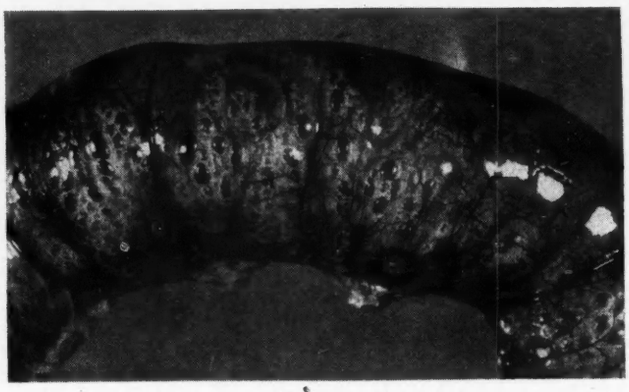
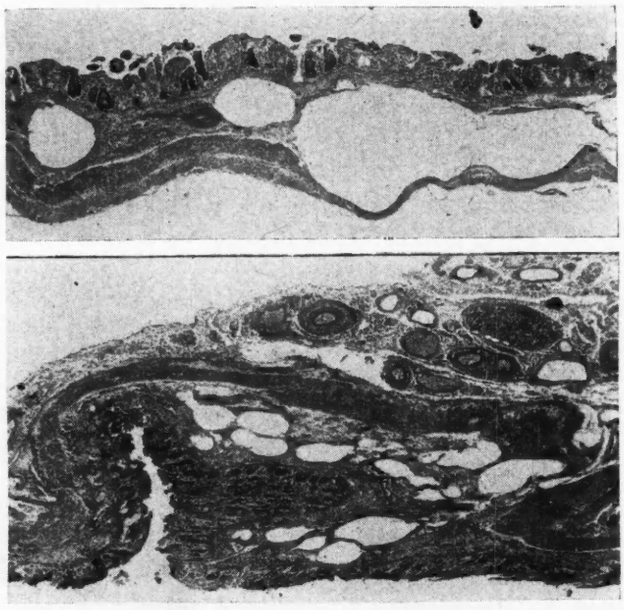


Fig. 3.—Portion of small bowel showing numerous subserosal gas cysts.



Figs. 4 and 5.—Low power photomicrograph of bowel showing submucosal and subserosal gas cysts.

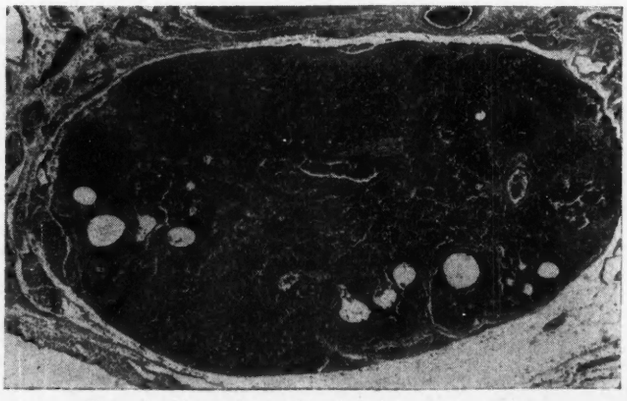


Fig. 6.—Lymph node showing gas cysts.

ileum, through the normal glistening serosa were seen numerous confluent clusters of gas bubbles, giving the bowel a foamy appearance (Fig. 3). Where these gas accumulations were less abundant, a linear distribution was evident, this being especially so in the mesentery of the small bowel. The bowel wall had the characteristic crepitant feel of interstitial emphysema.

Visible through the serosa were blotchy hæmorrhages averaging about 0.3 cm. in diameter, from red to bright red in colour, and most numerous in the ileum but present occasionally in the jejunum and the colon.

The mucosa was moderately injected. No ulceration was visible but small gas bubbles were seen, although these were much smaller in number than in the serosal layer.

The small bowel wall was thickened, and measured up to 0.3 cm. The ileum and the jejunum were distended with air, but there was no distension of the colon.

*Liver.*—Weighed 125 grams. The capsule was thin and transparent, and the underlying liver was purplish-brown. The cut surface had no lobular markings, and the consistency was of normal firmness. The portal vein and its branches appeared quite normal, and the bile ducts were quite patent and of normal size. Although air had been thought to be seen within the liver by x-rays before death, none was found on section at autopsy, since the liver was unfortunately not sectioned under water. The remainder of the abdominal organs showed no gross departure from normal.

*Microscopic findings.*—Sections taken at different levels in the bowel showed numerous air cysts each lined by a clearly evident flattened endothelium. The cysts were mainly submucosal in position. The surrounding mucosa and submucosa contained numerous acute and chronic inflammatory cells, but no giant cells were seen (Figs. 4 and 5).

*Mesenteric lymph nodes* (Fig. 6).—Nodes taken from the small bowel mesentery showed cystic spaces situated mainly at the periphery of the node and lined by endothelium. These appeared to be distended lymph sinuses.

CASE 2.—At the age of two months this female infant began to have soft green stools about four times daily. Previously she had been perfectly well. Three days later she began to pass many watery stools, but improved temporarily after penicillin and a rice water regimen. She relapsed soon after this and was admitted to hospital. On admission, the child was dehydrated with a distended abdomen. Her temperature was 100° F. Temporary improvement followed intravenous therapy, and some feeding was started. From then until her death five weeks later, the illness took a fluctuating and then downhill course despite intensive intravenous therapy, numerous antibiotics and cortisone. Two weeks before death a radiograph of the abdomen showed a large quantity of gas in the small bowel and colon, and multiple fluid levels were seen. A stool culture grew *Proteus vulgaris*.

### *Autopsy findings*

The abdomen was distended and a few petechiæ were noted on the anterior abdominal wall. Each pleural space contained 30 c.c. of thin clear fluid, and the lungs showed a dependent congestion. The peritoneum was smooth, with no increase in fluid. The retroperitoneal tissues around the cœliac axis and in the paracolic gutters were œdematous. The serosal surfaces of the bowel were smooth and glistening. In several areas throughout the length of the ileum and jejunum, small gas-filled bubbles were seen beneath the serosa. Some bubbles were also seen within the mesenteric veins, but may have formed after removal of the liver and transection of the portal vein. The mucosa of the jejunum and ileum was intensely hyperæmic, and small flecks of fibrin were deposited on the surface. The degree of hyperæmia of the intestinal mucosa became progressively more pronounced in the lower reaches of the ileum. Apart from one small hyperæmic area above the ileocæcal valve, no lesions were seen in the colon. A few vesicles of gas were seen within the submucosa, but they were most prominent in the subserosa. The gastric and duodenal mucosa appeared normal, and there was no evidence of pyloric stenosis. A lymph node in the mesentery measuring 1.0 cm. in diameter contained small gas-filled vesicles.

*Microscopic findings.*—Large vesicles were seen within the submucosa. Some appeared to consist of dilated lymphatics, while in others no endothelial lining could be detected. There was no inflammatory reaction around the vesicles. The small bowel otherwise showed intense congestion with superficial ulceration.

The cause of death was acute enteritis with pneumatosis intestinalis as a related finding.

## DISCUSSION

To date, well over 240 cases of this interesting condition have appeared in the literature, the first reference being 200 years ago.[1] Since the excellent review in 1952 by Koss,[2] who reported 250 cases, the validity of some of which he questioned, there have been several other reports.[3-10] A recent case of pneumatosis of the descending colon, presented by Creevey, Cohen and Riley,[11] includes several further references.

So far no satisfactory explanation has been put forward to account for the etiology of the gas cysts. Gas-forming bacteria have been incriminated but no conclusive bacteriological studies have been made, and the high oxygen content of the cysts would also be against this theory. It is most likely that a break in the mucosa of the bowel with or without increased intraluminal pressure is the cause of gas entering the submucosal and subserosal regions. Many of the cases reported have been associated with ulcerative or obstructive conditions of the alimentary tract. Other cases have been associated with instrumentation or previous operation on the gut, but in many of these cases the time interval before the cysts were discovered raises doubts as to a direct cause-and-effect relationship. Burt,[12] however, in 1949 reported pneumatosis of the descending colon, pneumoperitoneum and tissue emphysema following an operation for anal fistula. This case appears to directly associate the gas cysts with the operation. He was also able to produce subserosal vesicles in the descending colon of a dog by pararectal air injection.

Of interest, although unlikely to be a factor in human pneumatosis, is a very similar condition which can occur naturally in hogs and which can also follow a diet of polished rice and potein supplement. The condition can be prevented by the addition of whole corn, unpolished rice and yeast.

Our first case had the mechanical factor present in the form of marked hypertrophy of the pyloric muscle, but it is difficult to explain the gas cysts on the distal side of the obstruction, and so far removed from it. The radiograph showed a clear double contour line of air in the cæcum and the very strong suggestion of air either in or overlying the liver. Interstitial emphysema of the chest wall was also present shortly before death. The second case, one of acute enteritis, would offer ample opportunity for the entry of gas through breaches in the bowel mucosa. We suspect that this condition may be a symptomless and undetected feature of various bowel diseases, and be self-limiting.


### SUMMARY

Two cases of pneumatosis cystoides intestinalis in infants are presented. Reference is made to the possible etiological factors involved in the formation of gas cysts in the bowel wall.

Attention is drawn to radiological suspicion of the presence of gas in the liver in one of the cases. This may be a diagnostic feature in some cases, and could well be overlooked if the gas is in small quantity.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# SHORT COMMUNICATION

## IMPRESSIONS OF A COMMON PSYCHIATRIC ENTITY


E. S. HEATH, M.D.* and
D. G. McKERRACHER, M.D.,†
*Saskatoon, Sask.*


ONE OF THE COMMONEST referrals to the Psychiatric Unit of the University Hospital from the area's general practitioners seems to constitute a distinct psychiatric syndrome. It consists of a form of chronic anxiety neurosis with multiple somatizations in middle-aged farm women of European extraction. This paper is designed to set forth a clinical description and to consider the methods of treatment of cases.


*Resident in Psychiatry, University of North Carolina School of Medicine, Chapel Hill, North Carolina, U.S.A.
†Chairman, Department of Psychiatry, University of Saskatchewan, Saskatoon, Sask.


### DESCRIPTION AND MECHANISMS

While the majority of cases have been in women of Ukrainian extraction, women of other ethnic origins are not spared. The predominance in women of Ukrainian-Canadian origin may be due to the large proportion (one-seventh) of this group in the population of Saskatchewan.

Typically, the patients suffer from multiple somatic complaints such as various aches and pains, palpitations, nausea, indigestion, heartburn, limps, muscle spasms, and so on, in various parts of the body, as well as hypochondriacal phobias concerning such conditions as heart disease or cancer. Most of these symptoms are of relatively recent onset. None are constant, but they fluctuate in severity from day to day and easily disappear and recur. Notably, all the patients seem to have been reasonably well adjusted with perhaps a more than normal interest in their offspring until the last of these leaves the household and the patient's problems begin, usually in middle age, but not related to the menopause.

Almost all of the cases have been in farm housewives with little education whose husbands have been of similar ethnic group and who appear to have little understanding of or interest in their wives. A constant complaint of these women is that they are lonely and want to move into town to meet people. Paradoxically, these patients have always been socially aloof and bound up in their children.

While all of these women are dejected or unhappy, there are no evidences of depression, except as depressive equivalents, in the form of somatizations.

The patients tend to have come from large families and to have large families themselves in whom they have had strong emotional ties, perhaps as a refuge from the lack of interest that their husbands display in the households or in their wives.

Hospital admission (a gratification of dependency needs) seems to bring about a temporary relief of the symptoms, but these recur when discharge is imminent.

### CASE REPORT

The following is the case of a 45-year-old woman who had functioned reasonably well until two years before admission.

Mrs. B., a 45-year-old woman of Dutch-French parentage, was born in Germany but came to Canada in infancy. She was sixth in a sibline of seven. Patient

described her home life and childhood as having been happy. She completed grade six. The patient married at 19 and had five children. Her home and marital and sexual life were relatively well adjusted until the departure of her last child from the farm home two years before admission. Since that time she felt lonely and lost all interest in life, in her home and in her husband. Her migraine headaches, which had occurred only occasionally over the preceding 12 years, became very frequent. She also developed various aches in her legs and was unable to complete any of her household duties because of bouts of extreme fatigue. Always a somewhat possessive woman, she seemed resentful of her children's leaving her. She felt that her husband failed to understand her, particularly since he refused to comply with her wishes by living in town for the winters. In hospital all symptoms disappeared rapidly except for an occasional mild headache. Psychotherapy three times weekly for two weeks gave her little insight. All of her symptoms recurred when her discharge was considered.

### CULTURAL FACTORS

These women display conflicts between two cultures. Their husbands have absorbed the ideals of the Old World, in which the household is a life separate and inferior to that of the work on the farm. The husbands show no interest in visiting their wives in hospital despite strong social-service action. The patients, in turn, seem torn between wishes for a dependent status and the relative independence of women in the New World. While outwardly compliant, they are inwardly hostile towards their husbands' indifferent attitudes and behaviour. While the children provide an emotional refuge, the balance is upset when these mature and leave the household.

### THERAPY

Significantly, mere removal from the problem situation in the farm home and hospital admission alone leads to a marked clearing of symptoms. On the other hand, imminent discharge brings a full recurrence.

Tranquillizers, electroshock, somnolent insulin, supportive psychotherapy and direct suggestion have been used in treatment. All succeed temporarily, yet within a short time the clinical picture returns.

These women plague their general practitioners with their complaints and perhaps in desperation are referred to the psychiatrist. However, definitive psychiatric treatment seems little better than regular reassurance interviews given monthly or in longer periods in which the patient can ventilate her problems to her general practitioner in a dependency relationship to him.

Manipulation of the environment by moving to the town for the winter is not too successful. These women, despite their verbalized cravings for social contacts, have never really been outgoing, tending to restrict their interpersonal relationships to their children.

### SUMMARY

Multiple somatic symptoms of relatively sudden onset in middle-aged farm housewives of Ukrainian or other European descent, appearing after the last child has matured and left home, this activating dependency needs not met by their indifferent husbands, seem to comprise a relatively distinct psychiatric syndrome not related to the menopause. These patients seem to have maintained an equilibrium by their home life and children which is upset when the latter grow up and set out on their own and a form of chronic anxiety neurosis appears.

Admission to a psychiatric hospital, physical treatments and intensive psychotherapy are not rewarding or even necessary. Instead, periodic interviews with the general practitioner in the community who tries to understand them, so that they may ventilate their problems, seems the best form of treatment.

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**Special Article**

## THE NEED FOR ADDITIONAL REHABILITATION FACILITIES FOR ARTHRITIC PATIENTS IN CANADA*

*Healing is a matter of time but it is sometimes also a matter of opportunity.*

HIPPOCRATES' PRECEPTS.

J. NORRIE SWANSON, M.D., F.R.C.P.(Ed.),
*Toronto.*

IN THE ABSENCE of a specific cure for the chronic rheumatic diseases, the most important parts of the management of a patient suffering from one of these maladies are the prevention and correction of deformity, the maintenance or improvement of function, and the restoration of general well-being.

Unfortunately, the numerous remedies that have been promoted for use in arthritis and rheumatism tend to divert attention away from this. The correct diagnosis having been made, the best treatment does not *end* with the prescription of some anti-inflammatory or analgesic drug, in the hope of merely suppressing symptoms. Treatment only begins there. These drugs should be regarded as a medicinal "means to an end" namely, the rehabilitation of the patient. By rehabilitation is meant the restoration of the patient to as nearly his normal state of health and function as can be achieved by the present techniques of treatment. The eventual success of rehabilitation will depend upon two things: the proper evaluation of the patient and the rehabilitation facilities available.

1. *The evaluation of the patient.*—This depends upon three things.

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*From the Arthritis Clinics of Sunnybrook Hospital and Toronto General Hospital.

(a) *The activity of the disease.*—Only indirect measurement of this is currently possible. It is usually accepted that the erythrocyte sedimentation rate, the hæmoglobin and perhaps the latex test[1] are indices of severity of the disease activity. When the activity is only mild, the prognosis is likely to be good, but even a severely ill patient may achieve a good measure of rehabilitation though the time taken to do so may be much longer.

(b) *The functional capacity of the patient.*—This depends on his physical performance and can be more accurately measured, by various tests, in terms of mobility, strength, endurance and co-ordination. Again, the more disabled the patient the longer the time to increase his capacity; the final achievement may be less than that in a person with only mild incapacity at the start.

(c) *The personality of the patient.*—The successful outcome may depend on whether he is an optimist or a defeatist, a "go-getter" or a "give-up-nik". (The personality of the doctor and his team is of course of great importance too. The doctor or physiotherapist who creates confidence may inspire a defeatist into a state of optimism!)

2. *The availability of rehabilitation facilities.*—Obviously if these are inadequate, the final outcome will be less good. It is the purpose of this paper to assess the facilities available today, and outline what in the opinion of the author could be done to improve the situation.

Only in a few centres, such as the G. F. Strong Rehabilitation Unit in Vancouver, is there a special centre for the rehabilitation of arthritics. In other centres the arthritic *may* be well looked after in the rehabilitation unit of a general hospital. Not every hospital, however, has such a unit, and a general unit is not the ideal place to treat an arthritic.

The urgent need for good rehabilitation facilities in Canada is borne out by the following figures released by the Canadian Arthritis and Rheumatism Society.[2] It is estimated that there are about 50,000 persons completely disabled and probably over 250,000 partly disabled by the chronic rheumatic diseases. It is calculated that this represents a loss of at least 9,000,000 work days annually at a cost of $75,000,000 in wages (based on Dominion Bureau of Statistics figures for 1953).

It is contended, therefore, that if greater services were available to these unfortunate men and women, not only would their suffering be lessened, but, by their return to some form of gainful occupation, the saving in terms of money and production would greatly benefit the economy of the nation as a whole. The amount saved to industry and to insurance schemes would justify even a small fraction being used to build rehabilitation centres and sponsor research into more efficient specific treatment for the diseases. In the United States in the year after the enforcing of the Federal-State Rehabilitation Program the earnings of *all* disabled persons (not just arthritics) rose to $115,000,000. The department estimates that this group is returning approximately $10,000,000 a year to the United States Treasury by way of income tax. "It is estimated that the rehabilitants in 1957 will pay, during their worklives, $10.00 in federal income tax for every $1.00 expended by the Federal Government on the basic support programs to 1957."[3]

The B.C. Division of the Canadian Arthritis and Rheumatism Society has recently completed a study of 34 patients admitted to their Rehabilitation Unit during the years 1952-55. All were men; 24 had rheumatoid arthritis and 13 had ankylosing spondylitis. They stayed in the centre for an average period of three months. The per diem cost of maintaining a patient in the centre was $12.50 a day, so that the cost of the entire group was $40,000. Retraining courses for five patients brought the total cost to very nearly $45,000. However, on the credit side, the earnings of the 34 men increased from approximately $19,000 in the pre-treatment years, to $32,000 in the first year and $50,000 in the second year. These increased earnings totalled $42,000, to which must be added the sum of $6000, which represents the decrease in actual costs to the community in financial support.

"In other words, following an expenditure of approximately $45,000, an amount of more than $48,000 was recovered as benefits over the ensuing two years."[4]

However, rehabilitation should not be justified upon economic grounds alone. "Society gains much more than can be measured in dollars when a father regains his place as family breadwinner, or when a mother returns to the management of her home."[5]

It is the civilian sufferer from the chronic rheumatic diseases who is least well off as regards rehabilitation facilities. The veteran entitled to D.V.A. care, or the rare workman accepted as the responsibility of the Compensation Board, has special attention paid to him. He is taken care of adequately, usually in a special hospital, where a long stay is not economically disastrous to him. Not so the ordinary civilian. Either he is treated as an out-patient—intermittently and so, in fact, inadequately—or he is likely to be only "tolerated" in the so-called "acute bed hospital" for as short a time as is economically possible for him before his bed is required for some more acutely ill person.

The out-patient facilities offer him attendance, for varying intervals, at a medical or arthritis clinic. This may be followed by intermittent short periods of physiotherapy either at that hospital or at home by a visiting physiotherapist of such an agency as the Canadian Arthritis and Rheumatism Society. Excellent as such treatment may be, it is insufficient to provide maximum benefit as the visits cannot be frequent enough.

In-patient care is also likely to be inadequate for several reasons. Firstly, it is often difficult to obtain hospital care for a sufficient length of time

for the complete rehabilitation of a chronically disabled patient. This is because long-term care is expensive and no foundation exists like the Polio Foundation to subsidize his treatment. The hospital admitting staff are anxious for as rapid a turnover of beds as possible to cut down their waiting list. Finally the young intern, anxious to learn about as many different diseases as possible, also likes a quick turnover of patients. The patient himself becomes depressed watching others come and go while he remains, usually in a corner, and eventually will become impatient to go also.

Furthermore, it is questionable whether his particular needs—chiefly a carefully prescribed balance between rest and physiotherapy, with enough medication to facilitate both—are provided for in an *acute* general hospital. It is unfortunately not uncommon practice to put an arthritic patient to bed and leave him there. It is thus possible to suffer from *too much* rest in bed. This is frequently in a poor postural position, such as lying on a soft mattress propped up on pillows with sheets tightly tucked over his feet to make a neat appearance. This, coupled with an inadequate program of physiotherapeutic muscle re-training, may lead to further loss of strength and even more deformity. Experience has shown that only a few arthritic patients, even at the height of the severity of their illness, require complete bed rest for much longer than two weeks. During this time physiotherapy measures, such as heat administration and postural exercises, are usually indicated and should be faithfully and regularly carried out. After this initial period of complete bed rest, during which all investigative and diagnostic procedures can be completed, total bed rest may do more harm than good. The patient should thereafter spend an increasingly larger proportion of his time as an up-patient, the amount depending upon the nature and degree of his illness and disability. Physiotherapy and occupational therapy should occupy the most important part of his day. *It is at this point that most present-day facilities are inadequate.* It is customary and often only possible for a patient to have one physiotherapy session during the day, and this may last for only half an hour. He is thereafter left to his own devices to carry out repetitions of his program during the remainder of the day. This is unfortunate as, initially at least, he requires to be supervised repeatedly to see that he is in fact carrying out the treatment correctly. He needs encouragement to persevere in it. Experience in rehabilitation has demonstrated that patients recover better if they do their exercises together in a group, either in a ward or in the appropriate department. At this time it is better if they are away from acutely ill people and the atmosphere of sickness. It is best if they are in a specialized unit all the time where their own particular needs are most satisfactorily met.

Experience has shown that the arthritic patient, particularly the one with chronic rheumatoid disease, does not as a rule fit easily or well into a general rehabilitation program chiefly designed for traumatic conditions. Rheumatoid disease is a generalized systemic illness, and the patient suffering from it is ill and in pain. It is impossible for him to compete with healthy people recovering from fractures or other "acute" conditions. The patient with gouty arthritis or the overweight osteoarthritic patient is also likely to harm himself if he tries to do too much. In the connective-tissue diseases, such as periarteritis nodosa, and disseminated lupus erythematosus, joints may be involved, requiring the patient to enter a rehabilitation unit. These patients too must undergo treatment with caution.

In striving to keep up with healthy patients in a general rehabilitation unit, patients with arthritis are tempted to overuse their joints, and this leads to an exacerbation of their disease. These patients will do better if they work with other *chronically* ill or disabled persons, such as those suffering from multiple sclerosis, hemiplegia or cerebral palsy, whose problems resemble their own. They will do best, however, when they are with their own kind.

The need for specialized centres for arthritis was recognized in 1950 by the Canadian Medical Association and a policy endorsed by its general council.[6] According to a survey in that year, there was then a need for 1000 beds in or adjacent to general hospitals throughout Canada to be organized as centres for the special treatment of arthritis. The effectiveness of such a policy of segregation for arthritic patients has been well demonstrated by the success of the arthritis wards in such hospitals as Sunnybrook Hospital (D.V.A.), Toronto.

Criteria and standards for such centres are set forth in a further report made by a joint committee of the Canadian Medical Association, the Canadian Rheumatism Association and the Canadian Arthritis and Rheumatism Society.[7] At that time economic barriers were the main obstacles preventing the implementation of the recommendations of these reports.[8]

These barriers should no longer exist under a national hospital insurance plan. For reasons already stated, it is more likely that the demand for admission to hospital for acute conditions, both for diagnosis and treatment, will be a more serious obstacle to the treatment of the chronic arthritic.

There are several reasons, therefore, that justify the establishment of a rehabilitation unit specially for arthritics as part of a general hospital. These reasons are very similar to those that justify units for other chronic disabling diseases.

1. A rehabilitation unit for chronic diseases does not have the atmosphere of urgency and serious illness such as inevitably is engendered by oxygen tents, intravenous infusions, emergency night procedures and admissions, which disturb the sleep and emotions of patients in an acute ward and so delay their recovery. Patients in a special convalescent unit avoid this. In addition, where strict

asepsis is not so vital, morale can be elevated by allowing patients to wear their own clothes by day. The wards may also have pictures and ornaments which contribute to an atmosphere of convalescence and recovery. Lastly, the spirit of "do-it-yourself" can be fostered by encouraging them to help themselves, whenever possible. (See 4 below.)

2. By concentrating similar cases in one place, group physiotherapy is made easier in several ways. Deterioration of equipment is less, since it does not have to be transported long distances around the hospital. The time of the physical and occupational therapist and the patient is likewise saved by avoiding unnecessary travelling. There are greater opportunities for research into better forms of treatment as well as into the basic processes of the disease when similar patients are congregated together in one group. The patient's morale is usually heightened by seeing how others, similarly afflicted, succeed in mastering their problems. Group physiotherapy is basically group psychotherapy. Competition can be introduced into physiotherapy and occupational therapy procedures in this fashion.

3. Undergraduate and postgraduate training of doctors, nurses and physiotherapists in the treatment of the problems of the chronic sick can be very readily undertaken when teaching material for study is available in one place.

4. Special equipment such as beds equipped with self-help devices (overhanging beams, physiotherapy pulleys and weights) can be concentrated in one place. The keynote of rehabilitation is the restoration of function, with as little time spent in bed as is absolutely necessary. The frequency of the complications of improper rest such as bed sores, phlebitis and pneumonia, is therefore reduced. Patients are encouraged to get up for meals and use communal dining rooms. They are taught how to feed themselves with, if necessary, self-help devices. They are encouraged to go by themselves to the bathroom and the toilet as soon as possible, where adaptations such as rubber mats, stools, high toilet seats and arm-holders are available and which they can be taught to use so that their use becomes a habit when they go home. All these measures lessen the load on the hospital staff who, therefore, need not be so numerous or so expensively trained as the skilled nursing staff in the acute ward.

5. Under a national hospital insurance plan it is very likely that there will be an increasing demand for admission to the "acute beds" of the general hospital either for diagnosis or treatment. These beds are expensive to maintain as they require many highly trained nurses in the anticipation of dealing with seriously ill people. It is suggested that as soon as the acute stage is passed, less nursing of that particularly high calibre is required for the chronic rheumatic patient. Treatment should then be aimed at teaching self-care, as outlined above. This is best done by physical and occupational therapists or specially trained nursing aides who need not be so numerous or so expensive to maintain as their counterpart in the acute wards. The cost of a rehabilitation unit, if run efficiently, should be considerably less than that of an equal number of beds in an acute hospital. For example, the cost of maintaining a bed in the Canadian Paraplegic Association Rehabilitation Centre at Lyndhurst Lodge is $12.50 a day.[9] This cost factor may be decisive in planning additional rehabilitation units under national hospital insurance where the basic cost of a public ward bed is already $17.50 a day.

The admission of a patient to a rehabilitation unit should take place only if it is believed that there is a very definite chance that he or she will make some functional recovery. A unit should not be the dumping ground for the chronically ill or the permanently disabled. The progress of a patient through such a unit would probably be as follows.

The family doctor refers the patient to one of the staff physicians, either privately or through one of the clinics. If the patient is sufficiently ill to require complete bed care or presents a problem in diagnosis to be investigated, he should be admitted to the general wards of the hospital. After investigation has been completed and any plans for future procedures such as operations have been considered, the program that the patient is thought capable of following should be outlined. Medication and rehabilitation are then prescribed. The patient is then ready for transfer to the rehabilitation unit. Those who do not require much initial investigation should be admitted straight to the unit.

On his arrival there, the program of medication and physical therapy would be put into effect. At this point, or even before, the social worker may require to make contact with the patient's relatives to make sure that everything is functioning well at home during his stay in hospital and that whenever possible employment is being kept for him. This is important, because unless the worry of home trouble or future unemployment is allayed, rehabilitation may be imperfect or impossible.

In the initial stages, some time may still have to be spent in bed. As soon as possible, however, the patient is up-graded to a higher classification of functional capacity and encouraged to spend more of his day out of bed and, when the time comes, an increasing length of time in his clothes. At first physiotherapy may have to be at the bedside. Later, with greater functional achievement, it should be in the physiotherapy department, where group physiotherapy can be introduced better than in the ward. Patients should be encouraged to do their postural and remedial exercises together. The day thus is divided up into periods of activity alternating with periods of rest, meals and recreation.

At the appropriate time, in selected cases, psychological aptitude tests should be done with a view to assessing intellectual potential. A vocational counsellor should be called in as soon as it is ap-

parent that some return to employment is possible, in order to assist the patient in becoming re-established in his former vocation, or in a modification of it, or in an entirely new one if necessary. It is at this point that a teacher may be of great value in increasing the education to a point where a less physical and more mental occupation may be obtained. "The importance of a physical factor declines as the occupational scale is ascended."[10]

Before the patient's discharge, his own doctor should be informed of the progress and future planning. Return to employment may be to the former occupation or to a lighter one, and transportation may have to be arranged by the social worker or vocational counsellor. Finally, in cases of severe disability, employment through sheltered workshops such as Operation Reliance, which is supported by the Rehabilitation Foundation in Ontario, may have to be found.

In planning such units it must be kept in mind that there are several facilities which should be made available if the above program is to be adhered to.

1. The unit should be situated close to, or be part of, a general hospital—preferably a teaching one—because adequate consultant facilities must be quickly available in the specialties of internal medicine, surgery (chiefly orthopædic), psychiatry and gynæcology. Laboratory and x-ray facilities are then automatically at hand.

2. The physiotherapy and occupational therapy departments should be an integral part of the unit so that time for travel of personnel and wear and tear on equipment may be minimized.

3. The social workers attached to the unit should have offices where interviews with the patient, his relatives or his employers can take place in privacy.

4. A psychologist to perform aptitude tests, a vocational counsellor to advise on jobs, a speech therapist when required, and a teacher should be part of the unit. The services of the teacher are not just for juvenile patients; older people frequently have to learn a new occupation for which higher education would help.

5. A workshop and plaster room for making splints and other permanent appliances such as corsets, braces and shoes, is essential. Research into new materials and techniques can take place here if suitable personnel are available.

SUMMARY

Attention is drawn to the great need in Canada today for increased rehabilitation facilities in the treatment of patients with chronic rheumatic diseases.

It is claimed that the present facilities are inadequate for the large numbers requiring treatment who might be returned to useful and gainful work.

It is believed that, at present, a chronic rheumatic patient stays too long in wards for acute diseases and that more beds would be available for patients with acute illness if rheumatic patients were transferred to a rehabilitation unit where care should be less expensive yet more efficient and directed specifically to their needs.

It is re-emphasized that the particular needs of the arthritic patient (who may be systemically ill and in pain) are peculiar to his disease and require specialized care.

Some of the requirements for setting up a rehabilitation unit are described with these needs particularly in view.

"The opportunity to emancipate himself from the needless consequences of disability should be the right and reasonable expectation of every disabled Canadian."[11]

I would like to express my thanks to Dr. A. T. Jousse, Director of Rehabilitation, University of Toronto, and to Mr. Edward Dunlop, Executive Director of the Canadian Arthritis and Rheumatism Society, for their helpful suggestions and advice in the preparation of this article.

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## THE "LEARNED" PHYSICIAN

"Although today there still exists a vague admiration for the 'learned' man, the physician who has a sound 'liberal' education, such admiration is essentially lip-service only. This is one change which two centuries have wrought. There is no need to elaborate here the defective general education of medical students. Despite many platitudes by many medical school deans, such education is not considered important. If it were, the schools would require it before granting an advanced degree, just as, years ago, Oxford required a master's degree in arts before the candidate could study medicine. Medicine is no longer a learned profession in the sense formerly understood. Gaining admission to medical school requires a long training, but this is usually a matter of precise technical education, not of so-called liberal studies."—L. S. King: *M. Times*, 87: 31, 1959.

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## CARCINOMA OR CARDIOSPASM?

Carcinoma of the fundus of the stomach may extend into the lower œsophagus, insidiously narrowing the lumen, producing clinical and roentgen features simulating cardiospasm. The significant points to be noted, on roentgen study, in differentiating the two lesions are the identification of a gastric mass, limited distensibility of the fundus of the stomach, alterations in the course and motor activity of the œsophagus, an eccentric lumen and changes in the position and contours of the œsophagogastric region.

Œsophagoscopy is extremely important in these cases. An accurate radiologic diagnosis indicates to the œsophagoscopist where to concentrate his search for the underlying lesion. In these cases the mucosa of the œsophagus is frequently intact, and only histological study of the biopsy specimen reveals the submucosal extension of cancer.—J. Eliasoph and R. H. Marshak: *Connecticut Med.*, 22: 712, 1958.

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## THE GENERAL PRACTITIONER IN A SOCIALIST SETTING

*"The toad beneath the harrow knows*
*Exactly where each tooth-point goes;*
*The butterfly upon the road*
*Preaches contentment to that toad."*

—RUDYARD KIPLING

If the amount of ink spilled or the number of words spoken about a subject are any criterion of its importance, then the general practitioner is indeed the most important member of the medical profession, as many now claim. It is interesting to note that the growing problems of the general practitioner—his training, his whole future existence, his sphere of activity—are causing concern in many parts of the world. In East Germany, for example, a controversy has been raging on this subject for at least the past three years, and the problems involved are no nearer to solution than they were at the beginning.

The main thing that is bothering our socialist East German colleagues is the provision of a satisfactory medical service in rural areas. The planners and the theoreticians in the big cities and the ministries have been working on this problem and, as is not uncommon in such circumstances, producing solutions which find no favour in the eyes of the men on the spot. Two authors in particular, Renker and Winter, have brought a hornet's nest about their ears by the suggestion that the general practitioner should be replaced by a strategic network of internists and pædiatricians operating from health centres in rural areas, and supported by flying visits from other specialists as and when required.

One tough-minded country doctor, Brandt, has risen to the defence of his colleagues, beginning by pointing out that the country doctors are rarely consulted in these discussions, and in fact have something better to do with their time than to worry about distribution of manpower in rural areas. Nevertheless, he says, the time has come when the man who does the job should tell the planners some of the facts of life. He mentions some of the intangible factors in promoting a shortage of doctors in the country and then lists a formidable collection of qualities which the good general practitioner should possess. In the first place, he should have a total view of medicine, and this must include both curative and preventive medicine. Secondly, he should be capable of taking charge of any and all emergencies, and because of the limitation in facilities he must have a high talent for improvisation. Then, because he must work in isolation, he must have a high capacity for self-criticism and a thorough knowledge of his own limitations. He must be imbued with a life-long thirst for knowledge, but must remain untainted by arrogance or an ambition for scientific fame. If any man in the profession needs to be an idealist, it is surely the country doctor. Coupled with all these virtues, he must have the physical constitution of an ox, and, says Brandt sourly, he needs a thick skin to put up with all the nonsensical advice given him by medical colleagues not in general practice.

Brandt wisely points out that the diagnostic approach to a case seen on a house call has not altered much in the last 20 or 30 years, and that the basic apparatus carried in the physician's bag has also changed but little. If rural health centres are created and equipped with elaborate diagnostic apparatus, the apparatus will be used less continuously than in a city, and the results of interpretation will be more dubious. Another country doctor, Treutler, also joins in the fray and pours scorn on the suggestion of one planner that the general practitioner should be renamed a "specialist in general practice". If the government had their way, he says, the general practitioner would become merely a "specialist in referrals". Even a socialist community does not require that everyone should be treated by a specialist—that the colds should be seen by an otolaryngologist and the diarrhœas by an internist. One of the general practitioner's functions is to filter off and protect the specialist from an unnecessary burden of cases which can be dealt with perfectly well without him. He protests vigorously against the view that the general practitioner is condemned to extinction, and in this he is supported by Gehring, a medical officer of the Ministry of Health, who rather condescendingly remarks that Marx-Leninism sees no need to change the title of general practitioner to "specialist in internal diseases, class I" or anything else.

As regards training, Brandt feels that the status of the general practitioner will be secure only when his course of training is made as long as that leading to a specialty. Gehring suggests as a basis for discussion a three-year course which will centre mainly around internal medicine, the surgery of injuries, and preventive medicine, with obligatory refresher courses at three- to five-year

intervals. In addition, the general practitioner would be able to take on optional training, for example in pædiatrics or in obstetrics.

It is apparent that, whatever the complexion of the political setting, some of the basic problems of modern medicine are indeed the same the whole world over. It is also apparent that they cannot be solved by good advice from armchair critics.

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## *Editorial Comments*

### BCG STANDARDIZATION

Despite the continuing accumulation of evidence that, when properly administered, BCG vaccination can bring about a major decrease in the incidence of human tuberculosis, a brisk controversy continues to rage regarding the advisability of the mass application of this technique. The objections to such a policy have some validity, and are concerned with the dangers of mass vaccination and with certain epidemiological problems, particularly that of the loss of efficacy of the tuberculin test as a screening procedure in the detection of tuberculosis.

In a recent editorial in the *American Review of Tuberculosis and Pulmonary Disease*, Dr. René J. Dubos, whose opinions concerning infection in general, and tuberculosis in particular, are known and respected throughout the world, bypasses the arguments for and against the use of BCG vaccine, and takes up a problem that is not widely recognized, namely that of its standardization.

He emphasizes the fact that certain independent factors can affect the protective activity of any batch of BCG vaccine. These factors include the intrinsic biological characters of the substrain of BCG employed in the preparation of the vaccine; the physiological state of the cells in the sample of vaccine (as affected by the age of the culture at the time of harvesting and by the conditions of storage); and the number of viable cells in the dose of vaccine injected. He considers that many of the divergences in the results of BCG vaccination derive from the fact that the label "BCG" covers products exhibiting gross qualitative and quantitative differences in biological activity. He also points out that the margin of safety in the dose of vaccine that can be effectively given is far smaller than is usually believed. It is well known that a moderate increase in the dose may result in a disturbing frequency of adenopathies, while, on the other hand, a moderate decrease in the dose may sharply reduce the percentage of successful vaccinations, as measured by the frequency of occurrence and duration of effect of tuberculin allergy.

It is quite true that, as Dr. Dubos points out, no serious attempt has been made to assay the different biological characteristics in the BCG vaccines distributed for human use today. In most cases, some tests are made to confirm that the vaccine can produce tuberculin allergy. But, as Dr. Dubos remarks and as most students of this problem will agree, these tests have little quantitative significance. It is also reasonably clear and well accepted that tuberculin allergy *per se* is independent of immunity to infection, and that measurement of allergy does not provide convincing information concerning the protective activity of BCG vaccine. He points out that an enormous amount of work and discussion has been devoted to the assessment of the ability of BCG vaccine to elicit tuberculin allergy, while there has been surprisingly little emphasis on the ability of this vaccine to protect against infection.

It is suggested that several kinds of tests of the protective ability of this vaccine can be devised in experimental animals. Comparison between the survival time of vaccinated and of control animals infected with virulent bacilli is one such method. Another might be the evaluation of the extent of disease by the study of lesions in guinea pigs, since it is known that vaccination reduces considerably the severity of the lesions produced in guinea pigs by the intradermal injection of very small doses of virulent bacilli. Quantitative bacteriological studies such as have already been used in other directions might be made of the restrictive effects of vaccination on the multiplication of virulent tubercle bacilli in the organs of guinea pigs and mice, these studies being based on counts of bacilli in stained sections and on determinations of the numbers of viable bacilli in various organs by cultivation on appropriate culture media. While one admits freely the fallacy of attempting to transpose scientific data from animals to man, it is probable that, on the basis of theoretical immunology, the protective mechanisms that limit bacterial multiplication in experimental animals operate in humans as well.

It is possible that, considering the present status of tuberculosis mortality and morbidity, the *coup de grâce* to this ubiquitous disease might be delivered by such a weapon as mass BCG immunization. However, before any such program can wisely be undertaken, strict criteria should be formulated to ensure the safety and protective effectiveness of the vaccine used. Dr. Dubos suggests that the various national and international organizations, whose funds for the battle against tuberculosis are now being less heavily engaged, might well direct their efforts to research along these lines. One cannot help but concur with this wise and temperate observation.

S. J. SHANE

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### IMPROVING DRUGS BY CHEMICAL MODIFICATION

In a paper presented at a meeting of the New York Academy of Sciences this year, Jarowski drew attention to a variety of ways in which a more effective or less toxic or less unpleasant drug could be obtained by chemical modification of a parent derivative. He pointed out that very often the inventor or discoverer of a new natural product or synthetic compound for pharmaceutical use takes very little trouble to determine whether the form of drug which is being put on the market is the optimal one for therapy.

Canad. M. A. J.
June 1, 1959, vol. 80

Because of this disregard of the fact that superior performance may be obtained by simple physical or chemical modifications, he gave a number of examples of such modifications. For example, the invention of acetylsalicylic acid (aspirin) was due to Dreser's reasoning that the corrosive action of salicylic acid would be abolished by acetylation, and that hydrolysis in the intestine would release the parent compound for absorption. This proved only partially correct. A more recent example of the use of esterification to improve a drug is the production of triacetyloleandomycin, in which acetylation of the parent drug has produced a compound less soluble in water and therefore easier for preparation of palatable and stable aqueous suspensions for oral use. Similarly, the bitter taste of chloramphenicol made its oral use disagreeable until synthesis of the palmitate overcame this obstacle.

Another simple method of modifying drug action is by formation of a salt. Thus, conversion of quinidine sulfate into the polygalacturonate greatly reduces the nausea associated with oral administration; another good example is the common use of the procaine salt of penicillin G to alleviate pain of local injection. Similarly, phenoxymethylpenicillin (penicillin V) is commonly used as the potassium salt, because solubility is increased and the blood level is improved. Other examples of valuable salts are morphine tartrate—more effective than the sulfate and hydrochloride—and epinephrine tartrate, which shows the greatest pressor response out of a series of epinephrine salts.

Two drugs have benefited by the use of resin absorption. Thus vitamin $B_{12}$ is more efficiently absorbed after oral administration if an ion-exchange resin is used as a carrier, and codeine when administered as a resin adsorbate has a more prolonged action.

Lastly, chelation has proved of value in antibiotic therapy. For example, the local irritation caused by intramuscular injection of terramycin hydrochloride is eradicated by simultaneously giving magnesium chloride, for the presence of magnesium ion at the site of injection ensures complete adsorption. Tetracycline is also less irritable on intramuscular injection if magnesium chloride is simultaneously administered.

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## THE SURGEON AND THE OLDER PATIENT[1]

A study of the patients over 70 on the surgical wards of a Copenhagen hospital during the past 10 years contains many stimulating observations. For instance, while the proportion of elderly people in the population increased by 50%, they increased in the surgical population of Bispebjerg Hospital by 150%, and the need for nurses and other hospital personnel rose by a still greater proportion. Not only were diagnosis and treatment more difficult in this increasing group, but the necessity for earlier operation before serious complications arose made every problem more urgent. During the decade the operation rate on the elderly rose from 25 to 50%, while the operative mortality fell steadily. Though many more are being admitted to hospital to die, such persons are commonly admitted to the medical wards, and surgical admissions all call for treatment and therefore urgent decisions.

What are the surgical diseases of the aged? In Copenhagen the largest group was formed by abdominal emergencies: cholecystitis, strangulated hernia, appendicitis, intestinal obstruction, perforated ulcer and so on. It is widely reported that older people generally do not show symptoms and signs of "acute abdomen" till late, and a high proportion are admitted only after a viscus has perforated; even general peritonitis is often diagnosed only at autopsy. Old people have lived so long because of some extra toughness. They do not complain of pain easily. Traumatic lesions become the commonest reason for admission to hospital over 80 years of age, when enfeeblement and failing sight and hearing make trivial obstacles the cause of serious accidents. By far the commonest place of injury is the home, not the street. Peripheral vascular disease has a high mortality, for occluded limb vessels usually are significant of severe arteriosclerosis elsewhere.

The elderly patient tolerates prolonged bed rest badly; once he takes to his bed, he has given up in his own mind as well as in others' opinions. Early rising after operation has contributed to the lowering of operative mortality. Pulmonary embolism, bronchopneumonia and bed sores are terminal events in many persons once they are immobilized. This kind of surgical mortality follows the incarcerated hernia, acute cholecystitis, and the stenosed duodenal ulcer. It can be avoided by repairing the hernia while it is easily reduced, removing the gall-bladder before its stones become impacted and obstructing, and performing gastrectomy for duodenal ulcer before vomiting and chronic shock supervene. This prophylactic surgery can be applied in many different lesions, even in cancers of the breast or rectum, in the very old: if done before complications set in, life is made happier, less worrying and more comfortable when there is not much time left.

The surgeon will be looking after more elderly patients every year wherever he is working. As in so many other branches of surgery, he will become involved in building a team to help in a very difficult field. Specialists with a special interest among nurses, anæsthetists, social workers, physicians and physiatrists will help to make the evening of life easier for surgical patients. But the surgeon himself, as in other fields, will always have to make the important decisions: that operations must be done early on frail old people while they have the energy to recover. So often it seems that the old have achieved a greater than normal span by a greater will to live and, as life nears its close, each year, each week, each day becomes more precious. Often surgery can make this time more comfortable too.

BURNS PLEWES

### REFERENCE

1. AMDRUP, E. *et al.*: *Danish M. Bull.*, 5: 249, 1958.

# Medical News in brief

## THE RHEUMATOID SERUM FACTOR

Many human sera contain a factor or factors enhancing certain antigen-antibody reactions, and this activity is present in relatively high titre in the serum of patients with rheumatoid arthritis. The various agglutinating systems employed to indicate this activity include sheep red cells, bacteria, latex and bentonite.

In a report from Manchester, England (*Brit. M. J.*, 1: 523, 1959), Kellgren and Ball describe their studies of the rheumatoid serum factor using a sensitized sheep cell agglutinating system (S.C.A.T.). For some years they have been studying the sera of all patients admitted to the rheumatism unit at Manchester Royal Infirmary and also selected groups of out-patients, as well as samples of the general population.

They found a positive result in the S.C.A.T. in 93% of 382 in-patients with rheumatoid arthritis and a carefully confirmed diagnosis. There were positive tests in 40% of patients with systemic lupus erythematosus and systemic sclerosis and negative results in other forms of arterial disease and in dermatomyositis. In a sample of 1392 patients attending hospital for other forms of arthritis, the S.C.A.T. was positive in only 6.7%, and in a random sample of an urban adult population it was positive in 5.7%. However, this figure rose to 20% among 94 blood relations of persons with positive tests.

The authors believe that the rheumatoid serum factor may represent an index of some inherited metabolic characteristic which predisposes the individual to rheumatoid arthritis and certain other less clearly defined types of disease.

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## CHLOROTHIAZIDE IN DIABETES INSIPIDUS

It has been suggested that the site of action of chlorothiazide is in the distal portion of the nephron, where the drug inhibits production of "free water" which normally results from selective reabsorption of sodium and accompanying anions. A drug which interferes with the formation of free water would be of therapeutic value to patients with diabetes insipidus.

Crawford and Kennedy of Cambridge (*Nature*, 183: 891, 1959) report studies in rats and on human subjects with diabetes insipidus. They induced diabetes insipidus in rats by electrolytic damage to the hypothalamus, and showed that administration of chlorothiazide to animals with severe diabetes insipidus led to reduction of intake of water by 50% or more, with rise in urine osmolality.

The same effect was reproduced in two human subjects, one with diabetes insipidus due to lack of vasopressin and the other with the nephrogenic type insensitive to the hormones. Within an hour of chlorothiazide administration, urinary sodium, chloride and potassium excretion rates rose, as did urine osmolality. Within six hours the volume of urine began to fall. Responses in human subjects were obtained at the same dose levels as are employed in ordinary diuresis. Clinical trials are being continued.

## HYPERPARATHYROIDISM AND GASTRODUODENAL ULCER

It has been repeatedly suggested that there is an unusually high incidence of peptic ulcer in hyperparathyroidism. Hellström of Stockholm (*Acta chir. scandinav.*, 116: 207, 1959) found 34 cases in the literature in which sufficient detail was available to assess the relationship between the two conditions. Of these patients, 23 were men and 11 women. In most cases ulcer symptoms seemed to appear earlier than the common symptoms of hyperparathyroidism. Of particular interest was the fact that pathological changes were present in no less than 14 cases in other endocrine organs, such as the pancreas (islet-cell tumours 10, hyperinsulinism 2, adenoma of pituitary 9).

Hellström then studied his personal series of 121 patients with primary hyperparathyroidism and found that a gastroduodenal ulcer (in all but one case a duodenal ulcer) was present in 14 patients—10 men and 4 women. The incidence of ulcer was 28% in men as compared with only 4.6% in women. Again in most cases, ulcer symptoms started long before hyperparathyroidism was established. Although figures for incidence of peptic ulcer in a general population varied greatly from area to area, the author believes that the incidence of ulcer in hyperparathyroidism is definitely greater than in the general population. The relationship is however not clear, for the ulcer may be affected in three different ways. It may heal spontaneously or after gastric operation even though the endocrine condition persists; it may persist even if the endocrine condition has been cured by operation; finally, it may persist for as long as the hyperparathyroidism persists, and then heal. Hence the author believes that in some cases there is a relationship between the two conditions, probably in the form of an unfavourable influence on healing of the ulcer.

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## ANTIBIOTICS IN COSMETICS

Although it is by now generally recognized that antibiotics useful in the treatment of systemic infections should never be used in cosmetics, proposals have been made that agents such as bacitracin, neomycin and tyrothricin might be permitted because of their antimicrobial action against a wide range of microorganisms, and because they would rarely be required later on for treatment of systemic infections.

Nelson and Sulzberger (*J. A. M. A.*, 169: 1626, 1959) condemn outright the attempts to incorporate these in cosmetics. They advance three reasons against this practice: (1) the antibiotics concerned may well produce increasing numbers of cases of sensitization and irritation if indiscriminately used over a prolonged period of time by more and more persons; (2) the possible toxic effect of these antibiotics on the kidney after their prolonged and widespread use on the skin is still unknown; (3) indiscriminate use of the antibiotics may induce development of microbial resistance to these agents.

Nelson and Sulzberger wisely point out that there is no evidence that constantly rendering the skin aseptic is in any way desirable, except to reduce axillary odours. They challenge those who wish to include such antibiotics in cosmetics to show that the widespread use would not be harmful.

*(Continued on advertising page 47)*

Canad. M. A. J.
June 1, 1959, vol. 80

# NEW DRUGS

This listing of new products is based on information received from Dean F. N. Hughes, Faculty of Pharmacy, University of Toronto, and the *Canadian Pharmaceutical Journal*, to whom we owe thanks.

## HORMONES

**Triamcinolone (ARISTOGESIC CAPSULES (Pr), Lederle)**

*Description.*—Each capsule contains: Aristocort triamcinolone 0.5 mg., salicylamide 325 mg., aluminum hydroxide 75 mg., ascorbic acid 20 mg.

*Indications.*—In treatment of mild cases of rheumatoid arthritis, tenosynovitis, synovitis, bursitis, mild spondylitis, myositis, fibrositis and neuritis and certain muscular strains.

*Administration.*—Dosage should be minimal and should be individualized.

*How supplied.*—100.

**Triamcinolone (ARISTOCORT TRIAMCINOLONE ACETONIDE CREAM (Pr), Lederle)**

*Description.*—An acetal analogue of Aristocort triamcinolone in topical form.

*Indications.*—Atopic dermatitis, seborrhœic dermatitis and neurodermatitis; eczema; pruritus; generalized erythroderma; external otitis; and eczematized psoriasis.

*Administration.*—Topically, 3 or 4 times daily.

*How supplied.*—5 g. tubes.

**Triamcinolone (ARISTOCORT TOPICAL CREAM, 0.1% (Pr), Lederle)**

*Description.*—Each gram contains: triamcinolone acetonide 1.0 mg. (9 alpha fluoro-16 alpha-17 alpha isopropylidenedioxy delta 1 hydrocortisone). Preservatives: methylparaben 0.16%, propylparaben 0.04%, in a vanishing cream base.

*Indications.*—In management of certain of the dermatoses, will produce a local effect without systemic manifestations, e.g., atopic dermatitis, eczematous dermatitis, nummular eczema, contact dermatitis, pruritus vulvæ and ani, generalized erythrodermia, external otitis, seborrhœic dermatitis, eczematized psoriasis, neurodermatitis, eczematized mycotic dermatitis. Generalized dermatological conditions may require systemic therapy.

*Administration.*—Apply in small quantities to the affected areas 3 or 4 times daily.

*How supplied.*—5 g. tube.

## ANTIMICROBIAL AGENTS

**Erythromycin (ERYTHROCIN Oral Suspension, Pædiatric (Pr), Abbott)**

*Description.*—Contains 200 mg. erythromycin per 5 c.c. of palatable suspension.

*Indications.*—Infections—in infants and children—due to erythromycin-sensitive organisms.

*Administration.*—Orally, in doses of 2 to 3 mg. per lb. body weight every 4 to 6 hours.

*How supplied.*—60 c.c. This product replaces former Erythrocin Oral Suspension.

**Oleandomycin (OLICIN (Pr), Pfizer)**

*Description.*—Triacetyl ester of oleandomycin, antibiotic derivative therapeutically stable in gastric acid, hence absorbed rapidly to yield higher blood levels than previously attained with other agents of the group.

*Indications.*—Treatment of common infections caused by staphylococci (including strains resistant to other antibiotics); streptococci (beta-hæmolytic strains, alpha-hæmolytic strains, and enterococci); pneumococci, gonococci and *Hæmophilus influenzæ*. Experimental studies have also shown effectiveness against rickettsiæ, large vituses and certain protozoa, notably amœbæ. Particularly for infections of the respiratory and genito-urinary systems.

*Administration.*—Dosage varies according to the severity of the infection. For adults, the average dose is 250 mg. to 500 mg. 4 times daily. For children 8 months to 8 years of age, a daily dose of approximately 15 mg./lb. body weight in divided doses has been found effective.

*How supplied.*—Olicin Capsules—250 mg., bottles of 12 and 100.

Olicin Oral Suspension—60 c.c. bottles of 125 mg./5 c.c.; (1.5 g. dry powder).

Olicin Pediatric Drops—10 c.c. bottles of 100 mg./c.c.; (1.0 g. dry powder).

**Polymyxin and neomycin (CORTISPORIN Lotion (Pr), B.W. & Co.)**

*Description.*—Contains in each c.c.: 'Aerosporin' brand polymyxin B 10,000 units, neomycin sulfate 5 mg., hydrocortisone 1%, in a water-miscible, uncoloured and unscented lotion base.

*Indications.*—For local application in infection, pruritus and inflammation.

*How supplied.*—Plastic squeeze bottle of 10 c.c.

**Tetracycline and nystatin (COSA-TETRASTATIN (Pr), Pfizer)**

*Description.*—Tetracycline with glucosamine (for broad-spectrum antibiotic therapy with improved blood levels) and nystatin, anti-fungal antibiotic for protection against possible monilial superinfection.

*Indications.*—Infections in which tetracycline is indicated.

*Administration.*—Suggested average dose is 1 g. daily divided into 1 capsule (250 mg.) 4 times daily. Higher daily doses may be required for severe infections. Children's dosage should be proportionately less.

*How supplied.*—Capsules—(plain gelatin) 250 mg., bottles of 12 and 100.

Oral Suspension—(fruit-flavoured) contains 125 mg. Cosa-Tetracyn and 125,000 units of nystatin per 5 c.c. teaspoonful, 60 c.c. bottles containing 1.5 g. dry powder.

## VITAMINS

**Nicotinic acid (BENICOL, Can. Pharm.)**

*Description.*—Each scored tablet contains: nicotinic acid 500 mg., benactyzine HCl 0.5 mg.

*Indications.*—Treatment of hypercholesterolæmia.

*Administration.*—One to six tablets daily.

Note—a transitory flush may be evident for the first few days of therapy.

*How supplied.*—100, 500, 1000.

## HÆMATINIC

**Ferrous succinate (CEREVON CAPSULES, CEREVON B CAPSULES, Calmic)**

*Description.*—Cerevon Capsules: Each 4 minim capsule contains 150 mg. ferrous succinate.

Cerevon B Capsules: Each 4 minim capsule contains ferrous succinate 150 mg., riboflavin 1 mg., thiamine hydrochloride 1 mg., niacinamide 10 mg.

*Indications.*—Iron deficiency anæmia.

*Administration.*—One capsule three times a day or as prescribed.

*How supplied.*—100 and 1000.

## DIURETICS

**Hydrochlorothiazide (HYDROPRES (Pr), M.S.D.)**

*Description.*—Hydrochlorothiazide with reserpine.

'Hydropres'-25—scored, green tablets: 'Hydrodiuril' (hydrochlorothiazide) 25 mg., reserpine 0.125 mg.

'Hydropres'-50—scored, green tablets: 'Hydrodiuril' (hydrochlorothiazide) 50 mg., reserpine 0.125 mg.

*Indications.*—Mild to severe hypertension. Provides diuretic action, mild tranquillizing action, with complementary antihypertensive effects of the two components.

*Administration.*—Dosage individualized, varying from 1 to 4 daily of the 25 mg. tablet to 1 to 2 daily of the 50 mg. tablet.

*How supplied.*—100, 1000.

*(To be continued)*

Canad. M. A. J.
June 1, 1959, vol. 80



# Men and Books

## ALEXIS ST. MARTIN*

EDWARD H. BENSLEY, M.D., F.A.C.P.,†
*Montreal*

IN OCTOBER 1957 the Canadian Physiological Society appointed a committee to seek ways and means of memorializing the grave of Alexis St. Martin at St. Thomas, a small village in the province of Quebec about 40 miles north-east of Montreal. This was done at the suggestion of Dr. Charles A. Mitchell, who for many years has been keenly interested in the history of science in Canada. The composition of the committee is as follows: Dr. E. H. Bensley (Chairman), Dr. Roméo Boucher, Dr. Guy E. Joron, Dr. Charles A. Mitchell, Dr. Eugène Robillard, Dr. James A. F. Stevenson and Dr. Lloyd G. Stevenson.

Readers will recall that Alexis St. Martin was the famous patient of a famous doctor. Grievously injured in the chest and abdomen by the accidental discharge of a shotgun on June 6, 1822, at Mackinac Island in northern Michigan, Alexis made a miraculous recovery under the care of Dr. William Beaumont, a United States Army surgeon. After his wounds had healed, he was left with a permanent gastric fistula and became the subject of Beaumont's pioneering work on the physiology of digestion.

Our Committee decided that its first task must be to collect as much information as possible about Alexis St. Martin. Knowledge of the man is essential to the planning of an appropriate memorial. Therefore although some thought has been given to the form which this memorial may eventually take, most of our efforts to date have been directed to reconstructing the details of Alexis St. Martin's life. I must emphasize at the outset that our work is far from complete and this article should be regarded only as a report on progress.

Some of the facts of Alexis' life are to be found in Beaumont's account of his experiments and observations[1] and in the writings of Sir William Osler[2] and Dr. Jesse Myer,[3, 4] Beaumont's biographers. Additional data are contained in papers by Janowitz,[5] Luckhardt[6] and Peckham.[7, 8] Parish records have provided details of Alexis' birth, marriage, death and burial and have enabled us to trace some of his ancestors and descendants. In this we have been ably and generously assisted by M. Gabriel Drouin, Président, Institut Généalogique Drouin, Montreal and Paris. We have located one of Alexis' granddaughters, now living in Montreal, and are attempting to get in touch with other surviving relatives. The personal contacts with the family are being made by Dr. Eugène Robillard, without whom the Committee could accomplish very little. From these various sources we are able to present the following incomplete and fragmentary account of Alexis St. Martin.

Parish records show that Alexis was born and baptized in the Roman Catholic faith on April 18, 1794, at Berthier, Lower Canada (now the Province of Quebec). He was thus born earlier than had been previously assumed. Other records, including that of his burial, underestimate his age. His father was Joseph Bideguin dit St. Martin. Later documents show Alexis' full name to have been Alexis Bidagan dit St. Martin, Bidagan being a variant of Bideguin. The family was French in origin, Alexis' paternal grandfather having come to Canada from Masparraute, a village in the extreme south-west of France within the old province of Navarre.

We know nothing of Alexis from his birth and baptism on April 18, 1794, to the day of June 6, 1822, when, at Mackinac Island as a voyageur in the employ of the American Fur Company, he was wounded by the accidental discharge of a shotgun. Presumably his home had remained in the vicinity of Berthier, for it was there he returned when in later years he left Dr. Beaumont. The story of the accident and the subsequent course of the wound are too well known to require repetition here. He was treated by Dr. Beaumont at Fort Mackinac and, when declared a "pauper upon the Town and County of Mackinac" and threatened with deportation to Lower Canada, he was taken into Beaumont's family. In May 1825, while still at Mackinac, Beaumont commenced his experiments, although he had made and reported important observations before then.[9] The following month, Beaumont was transferred to Fort Niagara, taking Alexis with him. Then in August of the same year, Beaumont, having obtained furlough, took Alexis to Plattsburgh, New York. They had been in Plattsburgh "but a very short time, when the close proximity of the Canadian border and the scenes of his boyhood proved an irresistible temptation to St. Martin, and he took 'French leave' of his benefactor".[3] At the expiry of his furlough Beaumont had had no news of Alexis and was compelled to return to duty at Niagara without him.

Alexis had gone back to his Canadian home and, as shown by parish records, on October 9, 1826, he married Marie Joly at Ste-Elizabeth, a few miles from Berthier in Lower Canada. The next year he was engaged as a voyageur by the Hudson Bay Fur Company and made at least one trip west to the Indian country, going out in 1827 and returning in 1828. Meanwhile Beaumont was trying to get in touch with Alexis through agents of the American Fur Company. Through them he learned in 1828 that Alexis was living about 12 miles from Berthier at La Chalaupe.

In August 1829, Beaumont's efforts to obtain the services of Alexis met with success. The American Fur Company engaged Alexis and transported him from Lower Canada, with his wife and two children, to Fort Crawford, Prairie du Chien on the Upper Mississippi, where Beaumont was now stationed. Beaumont resumed his experiments on Alexis, who now stayed with him for almost two years. Then in the spring of 1831, Alexis and his family returned to Lower Canada with Beaumont's consent. The description of the trip is of interest since it shows Alexis' skill as a voyageur. Travelling in an open canoe with his family, Alexis paddled down the Mississippi, passing by St. Louis, Missouri, to the mouth of the Ohio, ascended that river, branched off on one of its northern tributaries, portaged to Lake Erie and then, by way of Lake Ontario and the St. Lawrence River, reached their home beyond Montreal.

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*From the Montreal General Hospital.
Presented in part at a meeting of the Osler Society of McGill University, November 6, 1958. Prepared for the Beaumont number of the *Journal of the Michigan State Medical Society*, May 1959, to whom our thanks are due for permission to republish.
†Chairman, Committee on the Memorialization of Alexis St. Martin, Canadian Physiological Society.

Canad. M. A. J.
June 1, 1959, vol. 80

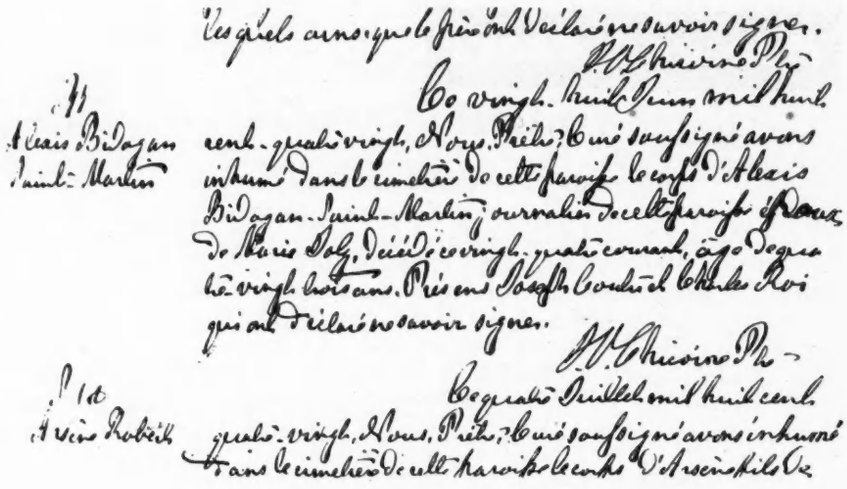

Fig. 1.—Record of burial of Alexis St. Martin.

Alexis had promised to rejoin Beaumont, and he kept his promise. In the fall of 1832, Beaumont went to Plattsburgh on furlough. Here he was met by Alexis, who had left his family at home in Lower Canada. Beaumont resumed his experiments and again Alexis stayed with him for almost two years. The greater part of Beaumont's furlough was spent in Washington where Alexis was made a sergeant of a detachment of orderlies stationed at the War Department. This was done to ease the financial burden on Beaumont. The "descriptive Role of Sergeant Alexis St. Martin" stated that "he is 28 years old, has dark eyes, dark hair, dark complexion, and is five feet five inches high, that he was born in Berthier, Lower Canada, that his occupation is that of labourer, and that he enlisted on December 1, 1832, for a period of five years".[3] On the expiry of his furlough in 1833, Beaumont was ordered to New York City and later to Plattsburgh. Alexis went with him and the experiments continued.

In the spring of 1834, Beaumont and Alexis separated. They had just completed a short trip during which Alexis had been exhibited to medical societies in a number of cities, including Boston. Beaumont's book[1] had been published. Alexis was permitted to return to Lower Canada to visit his family, having promised that he would rejoin Beaumont at Plattsburgh in June. This time he failed to keep his promise. He and Beaumont never met again.

Over the next 19 years, from 1834 to 1852, repeated attempts were made to persuade Alexis to go to Beaumont. Agents of the American Fur Company did their best to accomplish this, but all efforts were in vain. During most of this time Alexis was living with his family at or near Berthier. Beaumont was anxious to have Alexis without his family. Alexis wished to bring his family with him, and his wife was unwilling to let him go without her. This led to much argument and frustration. Moreover it was reported that Alexis had fallen into dissolute and dissipated habits and could not be trusted with money. In 1852 Beaumont made his last appeal to Alexis; the following year Beaumont died.

After Beaumont's death in 1853, Alexis becomes more difficult to trace. It seems that about 1856 he was exhibiting himself at medical schools in the eastern United States. In 1870 he was in Cavendish, Vermont, with his wife and their four married children, earning his living by chopping wood. From 1876 to 1879 they were in Oakdale, Massachusetts, where some of the family were working in a cotton mill. Early in 1879, Alexis returned to Canada and settled at St. Thomas with one of his children. Here he spent his last days. His wife and the other children remained in Oakdale.

During 1879, Rush Medical College, after locating Alexis at St. Thomas, bargained for his services as an experimental subject. This episode has been described in detail by Peckham.[7] Alexis refused to accept the conditions offered and added that he was too old and sick to make the trip to Chicago. This may well have been true; he was then 85 years of age. However, the *Canada Medical and Surgical Journal* of August 1879[10] recorded that Alexis' health was good. This note was published anonymously; probably it was written by Osler.[11] Since it is not widely known, I reproduce it here in full:

> "Alexis St. Martin, famous in physiological works for the experiments of Dr. Beaumont, is still alive, and at present a resident of St. Thomas, Joliette county, Province of Quebec, Canada, and is 78 years old. The wound in his stomach has never closed, and at present the opening in his side is nearly an inch in diameter. His general health appears not to have been in any way affected by the curious wound in his side, but has always been excellent. For his age he is now quite strong and hearty. He has been the father of twenty or more children, of whom four are now living. He has always been a hard worker, and never suffered from lack of digestion."

During his last days at St. Thomas, Alexis spoke of his travels in Europe, and in a letter written in 1879 he said he had been to Europe with Beaumont.[7] These statements cannot be believed. It is certain that Beaumont never took him abroad and there is no evidence that he went abroad after Beaumont's death. It is true that when Beaumont obtained a furlough in the fall of 1832, his stated purpose was to go to Europe with Alexis. However, Beaumont changed his mind and spent most of his leave in Washington. Also proposals were made in England and France to bring Alexis to those countries but nothing came of them. Perhaps in his old age the memory of these plans led Alexis to believe he had been to Europe.

On June 24, 1880, Alexis St. Martin died at the age of 86. Osler, who was then in Montreal, tried to obtain permission for an autopsy and secure the stomach for the Army Medical Museum in Washington. The family refused. On the day of Alexis' death a warning telegram came to Osler from the local doctor, saying "Don't come for autopsy; will be killed."[11] The body was kept at home for four days during a spell of hot weather to allow decomposition to set in. As a result the coffin had to be left outside the church at the funeral service on June 28. The corpse was buried 8 feet below the surface of the ground and it was rumoured that the coffin was covered with stones. The warning telegram to Osler was followed by an announcement that the grave was being guarded every night by men armed with rifles.

Burial was in the cemetery of the Roman Catholic Parish Church at St. Thomas. The record of burial,

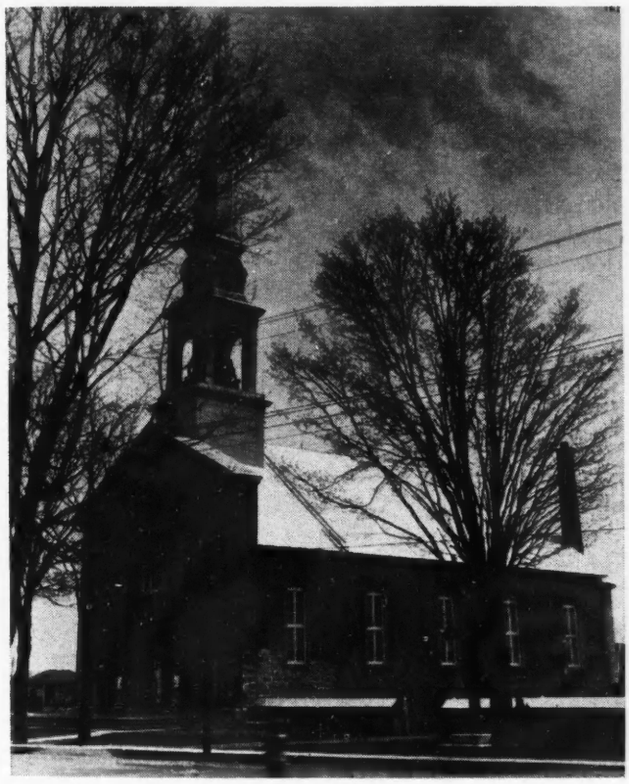

Fig. 2.—Parish Church and Cemetery at St. Thomas from the front.

signed by the Reverend Curé Chicoine, is shown in Fig. 1. Translated into English, it reads as follows: "The twenty-eighth of June, 1880, we Priest and Curé undersigned have buried in the cemetery of this parish the body of Alexis Bidagan Saint Martin, labourer of this parish, husband of Marie Joly, died the twenty-fourth of this month, aged 83 years. Presence of Joseph Coutruel, Charles Roi who have declared that they do not know how to sign." As in other records, Alexis' age was underestimated.

Photographs of the present Parish Church at St. Thomas and a part of its cemetery are shown in Figs. 2 and 3. Alexis St. Martin's grave is in this cemetery but its exact location is unknown. It is not marked and the parish records give no clue. In view of the fears that the body might be disinterred, perhaps the grave was never marked. We hope to obtain information about this from surviving relatives. If the grave can be located, the Canadian Physiological Society may be able to erect a memorial over it. If it cannot be located, we may seek permission to place a tablet on the wall of the Church.

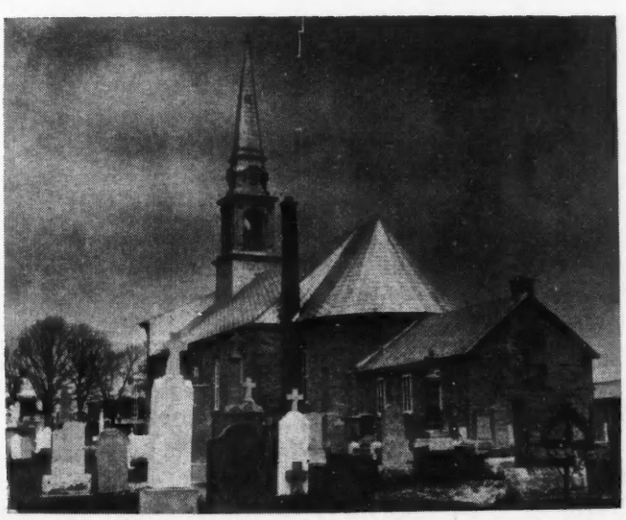

Fig. 3.—Parish Church and Cemetery at St. Thomas from the back.

Much has been written of Dr. William Beaumont and his pioneering studies. He justly has many memorials. Alexis St. Martin too deserves to be remembered. Some historians have dealt unkindly with him. Luckhardt, referring to a letter from Alexis to Beaumont, described it as "written by the surly, irresponsible, pecunious, ungrateful ward and human guinea pig to his solicitous, merciful, and generous benefactor".[6] Surely this is unfair. Alexis was a voyageur, one of that hardy breed of men who could take a canoe anywhere there was water and, when water ended, carry it to the next place where water began. He was uneducated and was even unable to write; in all his correspondence, others wrote for him and often he signed by making his mark. He could hardly be expected to understand the importance of Beaumont's work. Certainly he had reason to be grateful to Beaumont, who had saved his life and taken him into his home when he was declared a pauper. But even the most enlightened man may find it difficult to show gratitude continually over many years. Alexis' wife, Marie Joly, seems to have taken a poor view of his employment as a human guinea pig, especially when it involved separation from his family. The reaction of his relatives to requests for an autopsy indicates how they felt about Alexis being regarded as a useful and interesting specimen. All this was natural. It is worth noting that Osler did not write unkindly of Alexis. He called him "that old fistulous Alexis" and "the old sinner", but these are not harsh words. Alexis had a part in Beaumont's great work, and some small tribute should be paid to the memory of this sturdy and skilful voyageur from Lower Canada.

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## TRANQUILLIZERS

"Many psychiatric disturbances are of short duration due to endogenous factors, adaptation of the individual to stress, or change in the stress. The addition of a tranquillizer to a situation is merely the addition of one more to the manifold variables operating on the individual, not the least of which is the personality of the medical practitioner. Consequently the casual impression of the casual user of a tranquillizer is virtually useless. The value of the opinion of the individual using them constantly is little, if any, better."—T. Tait: *Ann. Gen. Pract.* (Australia), 3: 135, 1958.

Canad. M. A. J.
June 1, 1959, vol. 80

# REVIEW ARTICLE

## TOXOPLASMOSIS*

G. E. FFRENCH, M.A., M.D., F.R.C.P.[C],
*Toronto*

THIS RÉSUMÉ of the present state of knowledge of toxoplasmosis is presented with the hope that interest among physicians and veterinarians in Canada will be stimulated.

Infection of the fetus and infant by *Toxoplasma gondii* is now well recognized. Up to 20 years ago, interest was concentrated on these two groups, no adult infection having been recognized; the first congenital infection was reported by Janku (1923)[1] but the first authentic report of a fatal infection in a human infant by Wolf, Cowen and Paige (1939)[2] was delayed for nearly 20 years. Shortly afterwards, Pinkerton and Henderson (1941)[3] described infection in adults, thus completing the picture that had long been suspected. The pathogenicity for animals had been known for 40 years.

Chandler (1955)[4] has emphasized that the taxonomic relationships of *Toxoplasma gondii* are so little known that the question whether it belongs to the protozoa, fungi or Trypanosomidæ is still uncertain. Its mode of transmission shares this uncertainty, but it has been shown experimentally to cause infection when ingested by the alimentary tract, and again Beverley and Beattie (1952)[5] have demonstrated the increased prevalence of infection amongst handlers of infected animals. A more recent suggestion, supported by laboratory evidence, is that salivary contamination is the route of infection. Both Siim (1951 and 1952)[6] and Cathie (1953)[7] have isolated *Toxoplasma gondii* from the saliva of some of their patients.

Many classifications of the clinical syndromes caused by infection by *Toxoplasma gondii* have been made. Beckett and Flynn (1953)[8] described six clear types:

1. An asymptomatic infection with positive skin and serological tests.
2. A mild influenza-like infection with positive serology.
3. A picture resembling infectious mononucleosis, with slow convalescence and eventual complete recovery.
4. Chorio-retinitis, a chronic smouldering infection with destructive lesions as a result of rupture of a pseudocyst, probably a local sensitivity reaction to liberated antigen.
5. Acquired systemic infections: (a) rickettsia-like; (b) febrile with multiple organ involvement; (c) encephalitic.
6. Congenital infection: (1) fever, vomiting, convulsions, hydrocephalus, chorio-retinitis and cerebral calcifications; (2) an erythroblastosis-like condition but with a negative Coombs test.

It is the clinical picture in the first three types that so closely resembles the host of acute and subacute illnesses which cause such morbidity in certain areas of Canada.

The possibility of changes in disease patterns has already been emphasized (1957),[9] and recognition of new and unusual disease in Canada in the future has been foreseen. Toxoplasmosis is considered one of the conditions meriting further study. Interest in toxoplasmosis in Canada has been minimal compared to the vast amount of clinical work done elsewhere, particularly in the last 10 years. The first authoritative Canadian review was by Murray (1943),[10] who described the clinical manifestations and laboratory diagnosis up to that date, but beyond an editorial (1955),[11] nothing further appeared in the Canadian medical press until the recent study by Harper *et al.*[33] However, considerable unpublished work has been done in the Toronto Hospital for Sick Children with regard to congenital infections, and by the ophthalmologists on chorio-retinitis. At the former, for a period, the Sabin-Feldman dye test was carried out, and 12 proven cases of the infection in either infants or children were found; proof was obtained either histologically and/or serologically, and it is interesting to note the geographical distribution of the cases: *Ontario:* Toronto, 5; St. Catharines, 2; Walkerton, Aldershot, Goderich and Kirkland Lake, 1 case each. *Quebec:* Rivière-du-Loup, 1 case.

This indicates a wide distribution of the infection and supports the contention that it may be more common than is most usually thought. Harper *et al.* (1958),[33] in a survey of toxoplasmosis in the Toronto area, using the skin test and complement fixation test, found evidence of the infection in all age groups.

In addition, a small survey amongst Indians and Eskimos of the James Bay area of Northern Ontario suggested the presence of the infection in that region also.

The possible relation of toxoplasma infection to illnesses resembling infectious mononucleosis was first suggested nearly 30 years ago by Bland (1931).[12] He described infection in rabbits following the inoculation of blood from a human case of glandular fever and described organisms resembling toxoplasma. He successfully infected monkeys and noted blood changes like those in glandular fever, together with a similar histological picture in the lymph nodes. He remarked that, "The resemblance between the natural and experimental disease constitutes the strongest possible evidence for considering GF protozoa the cause of glandular fever in man." The cardinal points he made were: (1) the pyrexia; (2) generalized lymphadenopathy; (3) the alteration in the blood picture.

"In such a case unimpeachable evidence is required and this waits upon the obtaining of more cases of glandular fever for study. Their present rarity seems likely to postpone for some time the

*From the Queensway General Hospital, Hollywood Sub P.O., Toronto 14, Ont.

final solution of this problem." The last sentence would not hold today, for the incidence of infectious mononucleosis, although unknown, is undoubtedly relatively high. Murray (1943)[10] criticized very heavily the concept of a relation between *Toxoplasma gondii* and glandular fever, but some vindication of Bland's ideas has been given by the work of Siim (1951, 1952),[6] Gard and Magnusson (1951)[13] and Cathie (1953, 1954)[14] in Paul-Bunnell negative cases which resembled infectious mononucleosis very closely. Further reports of acquired toxoplasma infection have noted the abnormal blood picture (Beverley, Skipper and Marshall 1955).[15] To quote Cathie (1954):[14] "The present data do lend support to the belief that some at least of the cases of apparently non-specific lymphadenopathy with pyrexia in children may be due to toxoplasma infection and that positive serological tests so often found in the symptomless adult may be the residuum of such infection." And again Bain *et al.* (1956):[16] "Experience at present suggests that glandular enlargement may be the commonest manifestation of acquired toxoplasmosis." Brown and Jacobs (1956),[17] the latter of whom has done so much for the recognition and understanding of this ubiquitous organism, have suggested that it would be profitable to investigate such problems as the relation of toxoplasma to spontaneous abortion and the study of unexplained cases of "glandular fever" with serology extended beyond the time of remission. Thus the evidence mounts.

Here in this north-western shore belt of Lake Ontario, which is becoming more thickly populated each day, the morbidity resulting from infections resembling glandular fever but with negative Paul-Bunnell reactions is considerable. No figures for these non-notifiable infections are available, but any physician practising general medicine is aware of the problem, not least the prolonged time required for complete recovery in many cases. Some authorities (Beattie, 1957)[18] state that 5-8% of infectious mononucleosis cases with a negative Paul-Bunnell reaction are due to toxoplasmosis. Such figures cannot be ignored, and taken in conjunction with information that only 12% of infectious mononucleosis sera are positive in the Paul-Bunnell reaction in the Ontario Provincial Laboratory, we may, with some reason, expect that a number of the non-reactors are caused by toxoplasma (Labzoffsky, 1957).[19] This could well be important because it is in the acute infection by *Toxoplasma gondii* that some therapeutic effect has been noted; the most effective drugs used up to date are a combination of sulfadiazine and pyrimethamine (Daraprim), but there have not been sufficient cases to judge their effect objectively. Nevertheless, if treatment promises some reduction in morbidity, it would seem very well worth while to sort out the cases with a definite etiology and thus reduce a constant drain on industry and the general economy of lost man-hours.

One interesting fact from recent work emerges. Siim (1951, 1952)[6] and Cathie (1954),[14] as noted above, reported the isolation of organisms from the saliva of some of their cases, and the latter author mentioned the possibility of kissing as a mode of transfer and infection. More recently in a large survey of infectious mononucleosis in the U.S. Army this route of infection was strongly suspected (Hoagland, 1955).[20]

The incidence of latent infection has been the subject of serological studies for some years and surprisingly high figures have emerged. All of them have used the cytoplasm-modifying dye test, and until recently this was considered satisfactory; however, evidence has arisen to suggest that there is an antigenic relationship between *Toxoplasma gondii, Trichomonas vaginalis, Trypanosoma cruzi* and *Sarcosporidia,* and some suspicion has therefore descended upon these figures, particularly with regard to *Trichomonas vaginalis.* Cathie and Dudgeon (1953)[21] found 43% of normal people with antibodies; Beverley and Beattie (1954)[22] found 25% in Sheffield, England, and Ruchman (1948)[23] 25% in St. Louis. Chandler (1955)[4] quotes: 0% in Eskimos, 17-35% in U.S. cities, 68% in Tahiti; and in 59% of dogs, 34% of cats, 48% of goats, 30% of pigs, 10-12% of pigeons, and 3-20% of rats. Fisher (1951)[24] using toxoplasmin skin tests had a positive result in 17.5% of United Kingdom adults; Macdonald (1950)[25] using the complement fixation test in north-west England found 13 positives in 250 normal sera, 10 positives in sera from children with chorio-retinitis. Again, Christiansen and Siim (1951)[26] in Denmark found that 9.4% of hares suffered from toxoplasmosis. The use of the complement fixation test has up to now been limited by the accepted view that the complement fixing antibody appears later and, more important, disappears earlier than cystoplasm-modifying antibody and thus its use in screening "normal" populations for latent or past infection has been restricted. However, its specificity is undisputed, and refinements of the test may increase its value in population surveys. More recently, hæmagglutination tests are being developed.

Toxoplasmosis is an enzootic disease affecting many vertebrates, including birds and mammals, and recently the relationship of the animal disease to that in man has been emphasized (Cole *et al.*, 1953;[27] Ratcliffe and Worth, 1951;[28] Prior *et al.*, 1953;[29] Gibson, 1957;[31] Campbell, 1953[30]). It does not occur spontaneously in laboratory bred mice, and these are the animals of choice in experimental infection, although the guinea-pig is also used. The criticism of Bland's (1931)[12] original work was that the rabbits he used might have been suffering from a natural infection. More recently, suspicion that pet animals have been the source of human infection, either by salivary contamination or otherwise, has been confirmed on numerous occasions (Cole *et al.*, 1953;[27] Prior *et al.*, 1953;[29] Gibson, 1957[31]), and Campbell

Canad. M. A. J.
June 1, 1959, vol. 80

(1953)[30] reported an association between canine distemper and toxoplasmosis; he felt that acute generalized disease might stimulate the extension and development of previously latent protozoal disease. Cole *et al.* (1953)[27] could not find any evidence of communicability, but sera from nine people out of 35 with toxoplasma-infected dogs showed significant antibody levels.

Pay (1953)[32] discussed recent opinion and described mammalian infection in pigeons and dogs. The possibility of the former's being a reservoir should therefore be borne in mind. That the infection of animals is widespread is undisputed (Christiansen and Siim, 1951;[26] Ratcliffe and Worth, 1951[28]), and where animals, particularly small ones, come into constant proximity to man, human infection may be expected. Therefore it is necessary to show that enzootic disease amongst these animals, both wild and domestic, does definitely exist; if, *pari passu* with this demonstration, human latent and active infection is found, then a further search for a mode of transmission is justified. If, however, the human infection is found without strong evidence of animal disease, some more remote source of infection must be sought, and the value of such a study would be in: (1) defining this relation or otherwise; (2) searching for a remote source of infection if necessary; (3) considering means of transmission and thus the possible life cycle of the organism, as yet unknown.

The specific aim of an investigation should therefore be to identify acquired toxoplasmosis as a definite clinical entity in Canada, with a view to more general recognition of the natural history of the disease which might in time lead to successful prevention and treatment.

To achieve this, it would first be necessary to screen a sample of the population between the ages of 0 and 75 to see whether their sera contained a significant antibody titre. The methods available at present are a modified complement fixation test (Labzoffsky, 1957[19]) which is considered to be specific, a cytoplasm modifying antibody test (dye test) now under suspicion that it is not entirely specific, a hæmagglutination test and a toxoplasmin skin test, considered to be of some value but requiring the attendance on two occasions of large numbers of people.

This should be followed by the collection of all cases of disease resembling infectious mononucleosis by notification with subsequent visiting and confirmation with clinical and serological examination; the careful spacing of serological tests for heterophil antibodies, this to be prolonged up to, and indeed beyond, the period of remission, and the subsequent selection of those Paul-Bunnell negative cases for further study by such means as examination of saliva, lymph node and blood histologically and by animal inoculation. Actually, serological testing for toxoplasmosis should be begun at the start of the illness and continued concurrently with the Paul-Bunnell tests on all cases of suspected infectious mononucleosis or febrile lymphadenopathy and/or exanthemata of unknown etiology. At first sight it might appear that time might be lost in delaying biopsy investigation for 8-12 weeks, but there is evidence that organisms have been recovered from lymph nodes after the initial febrile illness, and it would be unreasonable to subject all cases of infectious mononucleosis to glandular biopsy or puncture.

Concurrently with a human survey, serological and animal surveys should be carried out. Firstly, a large number of wild animals should be caught and search for enzootic infection made. Secondly, serological studies on domestic animals attending veterinary clinics should be carried out. Thirdly, serological tests on cattle and hogs should be carried out to estimate the presence of a latent infection and hence the possibility of these animals acting as the immediate host and therefore a constant reservoir of infection.

An epidemiological survey has been planned. During the initial year only parts one and two of the study will be carried out. If from the results there is statistical evidence that infection is present, then during the second year part three will be proceeded with.

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# GENERAL PRACTICE

## COLLEGE OF GENERAL PRACTICE ANNUAL SCIENTIFIC ASSEMBLY

WITH A MEMBERSHIP now approaching one in four of Canada's general practitioners, the College of General Practice was host to more than 1000 doctors at the third annual scientific assembly in Toronto, April 20-23. During the four days of sessions, a new understanding of thyroid function, shock treatment, virus infections, anæmia, and pædiatric problems was imparted by medical authorities, and all session speakers oriented their papers to the practical needs of the family physician.

In his "Medicine for Today" lectures, Dr. M. M. Hoffman of Montreal discussed newer concepts of hypersecretion of thyroid hormone, and a belief that hypothyroidism may be due to inborn errors in body chemistry. He cautioned against incorrect diagnosis of myxœdema in its masked form. Dr. A. J. Rhodes, of the University of Toronto School of Hygiene, reviewed viral infections during the past ten years and reported "substantial progress" towards the development of prophylactic vaccines.

Other highlights of these medical papers specifically aimed at the general practitioner were a discussion of bone marrow conditions leading to anæmia by Dr. Ray F. Farquharson of Toronto; a report on phenylbutazone in rheumatic ailments by Dr. Wallace J. Graham of Toronto; and the current picture of coronary disease by Dr. Paul David of Montreal. Pædiatric papers at the general practice sessions included a paper on kidney failure in children by Dr. M. I. Rubin of Buffalo; one by Dr. A. L. Chute of Toronto, who noted how abdominal pain was symptomatic of different conditions in infants and in older children, and a discussion by Dr. Harry Medovy of Winnipeg who urged "a high index of suspicion" by the general practitioner during the first days of an infant's life.

More than 50 scientific exhibits presented a substantial picture of current medical advances, which, like the scientific papers, were directed to the needs and problems of the general practitioner.

Speaking as a founding member of the College of General Practice of Canada himself, Dr. Arthur F. VanWart, president of the C.M.A., said that the prime value of the College was the necessity it gave to continuing postgraduate training for the practising physician. Postgraduate courses alone would not keep general practitioners apace with medical progress, however. "We must still remember the discipline of self-education [and] the most important method of self-education is to carry out good general practice. There can be no education without careful history taking, full examination and adequate notes."

The retiring president of the College, Dr. P. B. Rose of Edmonton, questioned the picture of medicine being presented to the medical student today. It presents "a number of small, separate compartments and teaches him to think of the patient in the same terms instead of the whole man we find ourselves dealing with." While specialism provided the focus and initiative for advancing medicine as a scientific discipline, "increasing emphasis on the scientific basis of clinical diagnosis and treatment has brought about a tendency to divorce the academic from the practical," he said.

"The general physician has all but disappeared from the teaching staff in clinical training, and the trend to full-time teaching and research appointments is leading to a further decline in teachers who have a responsibility for provision of medical care to the patient in society," Dr. Rose said. Three reasons for promoting "undergraduate teaching by and for general practitioners" were to correct: (1) the imbalance of teachers who have little or no experience in the general practitioner's work; (2) the concentration on episodes of illness and categories of disease and individuals rather than the impact of a disease on a patient and his family in their environment; and (3) the artificial situation in which general medicine was seen during the education of the medical student. Moreover, "the very essence of family practice, continuity, must be brought home to the medical student".

"I believe that it is logical, realistic and constructive to face the fact that we as general practitioners must begin to play an active role in the education of all medical students. Those who realistically face the facts of the medical profession can no longer ignore the situation."

The increasing activity of the College of General Practice in medical education at both undergraduate and postgraduate levels was evidenced by reports of the College standing committees which were reviewed by the Board of Representatives in two days of sessions immediately preceding the scientific assembly. The Executive Director, Dr. W. V. Johnston, reported 18 scholarships and 10 bursaries, each worth $500, now available to College members to aid them in taking postgraduate courses. These awards are provided by the Upjohn and Schering companies and are presented through the College's provincial awards committees. The Wyeth Postgraduate Education Fund, which last year made $7500 available to further postgraduate training, indicated that all provincial chapters used these funds to expand their scientific sessions and clinical-day meetings for general practitioners.

Dr. A. J. Wasylenki of Regina reported for the College committee on residency training. Twenty-nine hospitals have been approved by the College for general practice residencies, and some 30 second-year interns are now occupying these residencies. The demand for residents far exceeds the available supply. A survey of these residencies showed that the hospitals were well pleased, and the residents considered this second-year program comparable with a senior residency or postgraduate type of training. The Canadian Council on Hospital Accreditation has been asked to assess these general practice residencies at the same time that they assess a hospital for rotating internship or for specialty training. The committee urged that more graduating doctors take the second-year residency training in general practice and that more practising doctors be encouraged to return for second-year training. To encourage the latter,

Canad. M. A. J.
June 1, 1959, vol. 80

they urged that it become a qualification for certification or fellowship in the College.

At the undergraduate level, Dr. Murray Stalker, chairman of the College committee on undergraduate medical education, said that liaison with medical deans of all Canadian universities has been encouraging. Creation of departments of undergraduate education in general practice has been suggested, and one university medical school may start such a department as a pilot project. There are now preceptorship programs for students of six of Canada's 11 medical schools. The College will determine how many of its members are prepared to accept students in each province. "We believe that the quality of general practice in Canada is the combined responsibility of the medical schools and the general practitioners. We continue to expect mutual understanding," the committee concluded.

Reporting on the work of College provincial chapters in furthering education at undergraduate and postgraduate levels, Dr. J. B. Michaud noted the highlights of the past year. Hours of study were established for five different courses by the British Columbia committee, and a two-week preceptorship program is operating for final-year students. The Alberta Chapter's scientific sessions were attended by 100 doctors for three full days, and 37 students have applied for preceptorships this spring. From Saskatchewan, close co-operation of both the university and district medical societies was reported. Here the College of Physicians and Surgeons was making every effort to co-ordinate educational activities of medical societies with the College educational programs. In the Maritimes, refresher courses, lectures, tape recordings, libraries and medical bulletins are all being employed for continuing postgraduate training. Five College members participated in the Dalhousie Refresher Course program last fall. In Quebec province, said Dr. Michaud, the provincial education committee was consulted on the organization of refresher courses in large hospitals, and the importance of postgraduate training was stressed at three regional meetings. Psychiatry lectures are being given to general practitioners at various centres through the support of the Wyeth Fund.

Reporting on the progress being made to integrate the general practitioner more closely with the activity of his local hospital, Dr. John J. Zack, Chairman of the College committee on hospitals, cited three different categories of hospitals: (1) The non-departmentalized rural hospitals, staffed by both general practitioners and specialists, only required a plan in which general practitioners could participate in all aspects of the medical staff. (2) The non-teaching urban hospitals which are now departmentalized required a more comprehensive plan "with detailed activity of the general practitioner as he fitted into the specific services clinically and on the various hospital committees administratively". (3) Teaching hospitals required just as comprehensive a plan as the second group, but additionally "a method by which a medical student could receive some instruction regarding family practice from the general practitioner".

The hospital committee is developing a model plan for the organization of a department of general practice in a hospital, which may serve as a guide in their establishment.

Established only four months ago, the College committee on research is now operating from quarters provided at St. Joseph's Hospital, London, Ontario. Dr. W. R. Fraser of London announced that the first project of the committee will be a study of the use of antibiotics to prevent complications in measles. Mead Johnson and Company have provided a $5000 grant to the College to further the work of the research committee. Noting that the British College of General Practitioners had established a research register of some 640 members, the College here now has some 50 doctors listed on its research register, Dr. Fraser reported.

At their pre-convention sessions, the College Executive and Board of Representatives approved a draft of the petition by which the College will seek a federal charter of incorporation. A private bill to incorporate the College will be presented to the federal parliament this year.

The Executive of the College for 1959-60 will be: Past-President, Dr. P. B. Rose, Edmonton, Alta.; President, Dr. M. E. Hobbs, Millbrook, Ont.; President-Elect, Dr. F. M. Fraser, Halifax, N.S.; Honorary Treasurer, Dr. Laurent Mailloux, Montreal, P.Q.; Chairman of Board of Representatives: Dr. I. W. Bean, Regina, Sask.

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# MEDICAL MEETINGS

## AMERICAN PSYCHIATRIC ASSOCIATION

Among the 170 papers and the 26 round-table discussions presented at the 115th Annual Meeting of the American Psychiatric Association in Philadelphia, April 27 to May 1, the general tendency seemed to be to summarize the present state of affairs rather than to report original and hitherto unpublished research. Thus, observers with a general interest in psychiatry were given a valuable synthesis of the present position in its various fields, while the active worker in one of the sub-specialties may have found a little less to interest him.

The meeting opened on Monday with the presidential address by Dr. Francis J. Gerty of Chicago who took as his theme "psychotherapy and the physician." He was concerned to point out that psychotherapy was an ingredient of all good medical treatment, whether by general practitioner or specialist, and that this fact was commonly overlooked, to the extent that medical students were not prepared to give psychotherapy or indeed told that it was essential for them to have some ideas about it. One by-product of this neglect was that psychotherapy might pass into the hands of those not medically qualified; this would not be in the interests of the patient. The Fellowship Lecture, given on Wednesday by Karl A. Menninger, dealt with hope as an ingredient of medical treatment. Menninger pointed out that whereas everyone was convinced that love was essential to mental health, and many were convinced that faith might be added to this, few realized the essential role of hope in survival and revival. The Adolf Meyer Lecture was given by Grey Walter of Bristol, England, who outlined some of his studies in neurophysiology, partic-

ularly concerned with the study of human adaptive behaviour (or learning). He emphasized certain difficulties in the way of these studies. For instance, in a study of man by man, there was a two-way exchange of information, and some sort of valve had to be interposed in the system to cut out the one-way communication which was not wanted. Moreover, verbal concepts were inadequate to deal with many situations in behaviour, and the personality of the patient studied made it difficult to apply the scientific method, which consisted essentially in isolating individual variables and studying them. Nevertheless, in spite of the compactness and infinite complexity of the brain, he was convinced that its function could be properly studied by physical and chemical methods.

The analysts had a session mainly concerned with subliminal stimulation, which they showed to produce effects so complex that the claims of advertisers that subliminal stimuli might lead to increased sales must obviously be founded on fallacies. In a session on drugs, Zirkle showed that small amounts of alcohol when used in combination with chlorpromazine significantly impaired the coordination and judgment. He therefore recommended that physicians prescribing chlorpromazine as a tranquillizer should warn their patients of the possible danger of using alcohol. A study by Olson suggested that patients on tranquillizers suffer a disproportionate amount of illness and injury, though it is difficult to make detailed statements about this. Hankoff had noted a significant placebo response in schizophrenic outpatients, which correlated also with the likelihood of success in clinical treatment. Loftus was concerned at the negative results he had obtained in a group of chronic psychotics with both chlorpromazine and benactyzine.

A session on the psychiatrist in community agencies brought out some interesting points, such as the value of a well-being clinic, as described by Macleod of Montreal, who reported great improvement in the health and attendance and productivity of Bell Telephone Company workers previously suffering from psychosomatic complaints and given "well-being" interviews. Friedman of Boston described the psychiatric home treatment service established in that city and dealing with a lower middle class area of 80,000 people. Its staff consisted of a psychiatrist, social workers and public health nurses. The team was available for home visiting in cases of mental disorder if the patient was between the ages of 16 and 60, and this approach enabled evaluation of the psychiatric illness in relation to social and family problems. Its use had often avoided hospitalization, or where hospitalization was essential, it had smoothed down the associated mental trauma in the family.

Several papers were read on various aspects of sensory isolation or deprivation. Concern was expressed at the neuroses produced in subjects taking part in an isolation and sensory deprivation experiment by sitting quietly in a sound-proof completely dark room for two hours at a time. Varying degrees of abnormal behaviour were also observed in patients with eyes patched bilaterally because of cataract or detached retina. The commonest minor abnormality was failure of the patient to co-operate, for example, by refusal to lie in bed. This was one of the early symptoms of the isolation mental syndrome.

In a paper on drugs and psychotherapy, Paul Hoch took issue with those persons who felt that either psychotherapy or drug therapy was indicated in many mental illnesses, and showed that a combination of the two in judicious measures was advisable in many cases, while in a few only one or the other mode of therapy was advised. Henry Brill described the latest statistics in the population of New York State mental hospitals. There had been a great fall in the numbers involved instead of the predicted increase, and this fall had coincided with the introduction of the newer tranquillizing drugs. The fall was shown to affect mostly schizophrenic patients, and particularly those in the age group between 21 and 40. Nevertheless, there was still a feeding of patients into the chronic hospital group. Moreover, the increasing numbers of other patients, such as alcoholics, indicated that the mental hospital would still require to house a large population for a long time. Boag of Montreal referred to the developments in the day hospital set up in the Allan Memorial Institute in 1946. At the end of 1957, the level of occupancy had fallen to an undesirable point, and the whole system was extensively reorganized and expanded to include a wide range of other ambulant services which had developed independently. This allowed a more flexible and economical use of space, and as a result there was an upsurge of referrals and occupancy together with improvement in morale.

In a session contributed by the U.S. Armed Forces, Ebersole read a fascinating paper on the effects of long submergence in nuclear submarines. After a 60-day underwater patrol, no significant fall in performance had been noted, and with the exception of the common complaint of headache, no psychosomatic illness or anxiety reaction had developed. Neither depression nor untoward aggression was seen, nor did the crew feel particularly isolated. Ruff described the psychiatric evaluation of candidates for space flight, with special reference to methods designed to study the limits of stress which candidates could undergo.

Wainwright pointed out the need for considering the emotional welfare of relatives of schizophrenics; he had seen four cases in which, when a schizophrenic daughter improved, the mother became emotionally ill. A similar phenomenon was described by Browne, who had observed that when a male alcoholic stopped drinking and became more dominant in the home his wife often became emotionally upset by the change in behaviour.

Meyer of Baltimore described the work of a psychiatric liaison service of Johns Hopkins University School of Medicine, in which the medical house staff had requested psychiatric consultation on about 9% of their total medical ward population, thus demonstrating the need for such a service. Lemere of Seattle had made a survey of the attitudes of general practitioners to their psychiatric colleagues. The general practitioners felt that about 24% of general practice was primarily psychiatric in nature and that they could take care of about four-fifths of this caseload themselves. Only about 50% of the general practitioners actually enjoyed doing this. They felt that as medical students they had been shown too many psychotics and too few neurotics, and that they should have had more instruction in counselling techniques.

Practitioners were also concerned at the lack of availability of their psychiatric colleagues, at the tendency of psychiatrists to isolate themselves from

Canad. M. A. J.
June 1, 1959, vol. 80

other physicians, and at the inadequate nature of reports received from them.

In a sessional meeting on legal aspects of psychiatry, Kubie demonstrated that the major source of error in testimony is not necessarily deliberate deception but rather errors of memory. Testimony which is always dependent upon memory is not a safe basis for legal processes, whether it is the testimony of accuser, accused or witness; nor is the memory of judge, lawyer or juror. Greater use of recording and filming devices is advised.

Sheps of New York City had found benefit from the use of combined group and individual therapy in the office treatment of borderline psychotic or schizoid patients; the group does not need to be organized around common problems, for fears, guilt and feelings of inadequacy are common to all patients. Coleman described an approach to the teaching of psychotherapy, stating that this teaching should ideally begin when the student makes his first contact with patients. The principal problem in teaching psychotherapy is to help the student to get rid of his preconceptions, his distortions of attitude and behaviour and his discomforts. Selzer helped to destroy the myth of the happy college student. Out of 500 students interviewed by psychiatrists on the staff of a mental hygiene university clinic, 35% were psychoneurotic, 25% had personality disorders and 21% were schizophrenic. There is a danger in such settings of overlooking psychoneurosis or a personality disorder and calling it an adjustment problem. Nemiah made a plea for the reconsideration of the lecture as a valuable teaching tool, now often treated as a poor relation and unjustifiably so. Tyhurst of the University of British Columbia described a family program for first-year medical students. The University of Colorado is also doing something about teaching in clinical psychiatry early in the medical course, according to Margolin, who described efforts to "humanize" the profession of medicine which included elevation of psychiatry to the status of a major department in the medical school.

Rose thought that separation of parent from child if carried out over a short period and carefully controlled might be a valuable diagnostic and therapeutic tool; structured and realistic separations are not inevitably traumatic, and temporary separation of children with hospitalization as a relieving and diagnostic tool may be helpful. Balser had made a survey of suicide in adolescents and found that in a large proportion of cases there was a schizophrenia; although depression was present in at least half of the cases, it was not the most significant element in the pathology. The most significant finding was withdrawal, preoccupation with fantasy life and extensive use of projections varying from ideas of reference to delusions. Schaffer described an attempt at family psychotherapy; he had worked with 25 families each of which included one adult regarded as mentally sick. Group meetings consisted of the patient, his parents and any siblings available, while the patient might perhaps also be seen individually. Ewing felt that in handling alcoholic patients, it was valuable to have both patient and his wife in therapy, which promoted awareness and understanding of the situation.

O'Neill defended the mental hospital as the cornerstone of community psychiatric services, pointing out that only a small percentage of persons developing mental illness can be successfully treated in the community outside a mental hospital. Bloomberg wanted to establish hospitals of 75 to 100 beds on a community basis rather than larger hospitals in isolated institutions. Tallman described improvements in the mental hospital program, including establishment of day and night hospitals and extension of the state hospital into the community by increasing establishment of psychiatric units and clinics in general hospitals. In discussion, Tyhurst of Vancouver made some pungent comments on the traditional mental hospital but found disagreement among other discussants.

Weigert had carried out some controlled experiments to evaluate the role of suggestion in response of depressed patients to ECT, and found no indication that suggestion played any part in the response. Bullard had studied two groups of chronic schizophrenic patients treated for a six-month period with tranquillizing drugs in a large state hospital and a small treatment centre respectively. Differences in discharge rate between the two appeared to be related entirely to the social and psychological resources available at the hospitals. Rackow suggested that the new "open door" look in management and care of chronic schizophrenics had perhaps more reform fervour than informed treatment orientation behind it. Bernath described individual brief psychotherapy with Hungarian refugees in the United States; this had given good results in adjusting mentally disturbed patients to their new background.

Two papers and a round-table conference on the relation between religion and psychiatry brought out several points. The first significant point was that the general tendency was to teach the clergy some psychotherapy, but not to teach the psychiatrists anything about religion. There was some concern lest clergy practising pastoral counselling might forget their primary role, or take on patients whom they could not handle for lack of knowledge. Nevertheless, it seemed that there was an eagerness to co-operate between the two professions, particularly in relation to certain Protestant churches. The situation is at present purely experimental, and much more study and experiment are necessary to define the fields of the two professions.

There were a number of papers on drug treatment in psychiatry, and a round-table conference on the relative indications for ECT and drug treatment in depression. The material brought out at this round-table conference covered very much the same ground as the international Conference on Depression and Allied States, mentioned in the April 15 issue of this Journal. Dr. Lehmann however did mention that in addition to earlier findings, imipramine had been found to benefit obsessive-compulsive and phobic states, which could be precursors of a depression. Ruskin and Goldner of Saginaw, Michigan, also gave a paper on imipramine (Tofranil) in treatment of depressive states, basing their paper on a study of over 300 patients. They stated that improvement was witnessed irrespective of the clinical diagnosis in all depressive states, and relief was also obtained from other associated symptoms; even delusions and hallucinations often became less troublesome. Of the patients 63% improved to such an extent that they could return to their former activity, and improvement began at intervals between three days and three weeks. Several had to continue low dosage of the drug for seven to 24 months. Side effects were not serious.

Furst of East Orange, N.J., described his studies of an analogue of iproniazid, called phenazine or W1544A, which he gave in doses of 60 to 90 mg. daily plus 25 mg. pyridoxine. A remission was obtained in 69% of cases of depression. Winkelman of Philadelphia had conducted a long-term investigation of chlorpromazine; 75 patients had taken the drug continuously and 50 intermittently for six years. He thought that long-term phenothiazine therapy was extremely valuable in psychiatry and that in most cases the long-term result could be predicted after about two or three months of treatment. Abse of Chapel Hill, North Carolina, had conducted a double-blind study of patients with acute mental disturbance given either chlorpromazine, reserpine, powdered opium or an equivalent number of placebo capsules. In addition a psychotherapeutic program was conducted. Little evidence was obtained that the ataractics conferred any outstanding benefits not received with a placebo. The placebo and the general design of drug evaluation in psychiatry was considered in great detail by Ewing of Philadelphia, who described his own methods, and also the drawbacks to them. In discussing this paper, Hoch agreed that some experimentation in techniques of drug investigation is much needed, and drew attention to the fallacies in using controls which often had only one element in common — the diagnosis. He preferred using patients as their own controls, with the double-blind technique and use of placebos and another active drug than the one under test. S.G.

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## CANADIAN ANÆSTHETISTS' SOCIETY

The annual meeting of the Western Division of the Canadian Anæsthetists' Society was held in Saskatoon from March 19 to March 21. Fifty-one anæsthetists, from Vancouver to Winnipeg, were registered.

Dr. R. A. Gordon, Secretary of the Canadian Anæsthetists' Society, was present, and Dr. P. R. Bromage from Montreal was the guest speaker. Dr. E. A. Gain of Edmonton is President-elect.

The scientific portion of the meeting consisted of basic research and medical papers delivered by the following: Dr. R. S. Lambie (Winnipeg), Dr. G. M. Wyant and Dr. E. C. Cockings (Saskatoon), Dr. P. R. Bromage (Montreal), Dr. G. F. Day and Dr. G. Screech (Vancouver), Dr. F. A. Walton (New Westminster), Dr. A. B. Dobkin (Saskatoon), Dr. J. S. Ruddell (Lethbridge), Dr. F. C. Haley (Saskatoon), Dr. J. E. Merriman (Saskatoon). Dr. E. A. Gain (Edmonton), Dr. D. R. Collins and Dr. M. H. Schultz (Vancouver). Dr. S. Fogel (Saskatoon) gave a lecture demonstration on hypnosis. Dr. J. H. Harland spoke on medical-legal aspects of the surgeon-anæsthetist-patient relationship.

There was an extensive program for the ladies and a very full social program in the evenings.

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## CANADIAN CANCER SOCIETY

The 1959 Annual Meeting of Canadian Cancer Society will be held in the Westbury Hotel, 475 Yonge Street, Toronto, Ontario, on Monday, June 15, 1959, at 11:00 a.m. (local time) to receive the reports of the Directors and the Auditors and to transact such other business as may properly be brought before the meeting.

# Association Notes

## HANDS ACROSS THE SEA

In anticipation of the visit of C.M.A. members to the United Kingdom this summer, a number of British specialist societies have indicated their desire to facilitate contacts for Canadians. Among those who have actually filed their intentions are the following. Further information may be obtained from the Secretary or other officers listed.

British Cardiac Society: Secretary, Dr. Patrick Mounsey, 35 Flood Street, Chelsea, London, S.W. 3, England.

Midland Institute of Otology: President, Mr. W. Stirk Adams, F.R.C.S., 81 Harborne Road, Edgbaston, Birmingham, England.

Scottish Association of Medical Administrators (Hospital): Chairman, Dr. S. G. M. Francis, The Royal Infirmary, Edinburgh, Scotland.

For C.M.A. members whose interests are general rather than specific the helpful services of the Commonwealth Medical Advisory Bureau can be confidently recommended. A letter in advance to the Medical Director, Dr. R. A. Pallister, B.M.A. House, Tavistock Square, London, W.C. 1, will insure that doors are opened and personal contacts promoted in any field of medicine.

Arrangements are being made by the B.M.A., through the courtesy of the authorities concerned, for doctors who would like to have the opportunity of visiting some of the well-known London hospitals. In addition to this program, three motor coach tours from London will be available during the week immediately following the Joint Meeting:

Monday, July 27: Visit to Harlow New Town, Essex. This is a recently built "satellite" town to take overflow population from London, and general practitioners may be interested in the new health centres as well as in the town itself. (Tour limited to 40.)

Wednesday, July 29: Visit to Oxford on the invitation of the local Branch of the B.M.A., the Oxford Medical Society and the United Oxford Hospitals. (Number limited; for details of this tour, see below.)

Thursday, July 30: Visit to Cambridge on the invitation of the local Branch of the B.M.A. (Number limited.)

As these three excursions will be mainly of tourist interest, it will be possible for doctors to be accompanied by their wives. A charge will be made for transport and refreshment. It will be of great assistance if doctors interested in any items of this program will let Dr. Pallister known as early as possible so that arrangements can be completed.

### *Open Day in Oxford*

Canadians who are visiting Britain in July will be interested to know that Wednesday, July 29, has been declared an Open Day in Oxford and that arrangements have been made for visiting doctors to see the hospitals and other sights in the city on that day. These arrangements have been made by the local division of the British Medical Association in agreement with the staff of the United Oxford Hospitals and the Oxford Medical Society, and a luncheon has been arranged in Magdalen College at mid-day (cost including drinks

£1). Guides will be available after lunch to take visitors sightseeing, and the British Medical Association is arranging coach parties from London.

It would be a great help if anyone intending to visit Oxford that day could give previous notice to Dr. R. A. Pallister, Medical Director, Commonwealth Medical Advisory Bureau, British Medical Association, Tavistock Square, London, W.C.1., or to Dr. W. S. Holden, Honorary Secretary, B.M.A. Regional Office, 44 St. Giles, Oxford, England, as soon as possible, mentioning whether there is any particular section of hospital life or work which he would like to see.

### GOLF AT EDINBURGH

Are you a low handicap golfer? Would you like to play at Muirfield where the Walker Cup and the British Open will be played this year? The B.M.A. has challenged the C.M.A. to a 16-man match at Muirfield for the Benger's Trophy on Friday, July 24, commencing about 10.00 a.m. Clubs will be loaned to Canadians who do not bring their own. Players of all proficiency will be welcomed, but the C.M.A. team will be selected from the 16 with lowest handicaps who register for golf at the Assembly Club.

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### CONVENTION EXPENSES 1959

The Minister of National Revenue, in response to representations by the Committee on Income Tax, has ruled that the three portions of the 92nd Annual Meeting of the C.M.A. may be regarded as one "convention" for purposes of 1959 income tax returns by members entitled to deduct expenses of practice.

A composite certificate of attendance in the following form will be provided to members attending any or all portions of the Annual Meeting, the portions not applicable being rendered void.

It is emphasized that special consideration has been given to the unusual character of our 92nd Annual Meeting and that this ruling does not represent a precedent for future meetings. Members attending any or all portions of the Annual Meeting are urged to register without fail in order that the certificate of attendance may be issued in January 1960.

Certificate

**THE CANADIAN MEDICAL ASSOCIATION**

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This is to certify that the undermentioned was in attendance for a period of ..... days during the 92nd Annual Meeting of The Canadian Medical Association which is divided into the following components:

(a) the Session of the General Council, Toronto, May 29 and 30, 1959
(b) the Annual General Meeting, Toronto, June 30, 1959
(c) the Joint Scientific Sessions with the British Medical Association, Edinburgh, July 18-24, 1959

A. D. KELLY,
*General Secretary*

Dr. .....

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# LETTERS TO THE EDITOR

### FLUORIDATION OF TABLE SALT

*To the Editor*:

Dr. D. W. Mills has invited comment on his recent letter in the Journal (80: 667, 1959) concerning fluoridation of table salt.

He speaks of the "current controversy" concerning the fluoridation of communal water supplies. One should be clear that this is a political controversy, indeed a political football, and has no reference to any division of opinion in the medical, dental or allied professions. I don't think there has ever been a more nearly unanimous opinion as to the safety, desirability, efficacy and practicability of any health measure. Any controversy that exists is outside of the healing professions.

The possibility of the addition of fluoride to table salt is most interesting. Theoretically, there can be no practical objection to it, but certain points must be kept in mind. We already have a method for making this substance available to all persons in Canada served

by a communal water supply. This method has been the subject of long, well-controlled study in many centres. It has been proven beyond any doubt. If we are to use table salt as a vehicle, similar long-range studies will be needed before we can draw any conclusions.

There is merit in the addition of fluoride to table salt in that it will make this substance available to persons in rural areas not served by a communal water supply. However, some of those who need it most will not receive its benefits. It has been well proven that the maximum benefits accrue when fluorides are ingested during the entire period of enamel development. This means that the infant and very young child necessarily must have this protection from birth. Fluoride in table salt will, in all likelihood, not form a part of the child's diet until he begins to take a relatively complete range of foods. In addition, some children, on a restricted salt diet, will not receive its benefits.

Dr. Mills draws a parallel with the use of iodized salt but suggests two products should be made available: a fluoridized salt and a fluorine-free salt. The great success with iodized salt was, in no small part, due to the fact that *all* table salt was iodized. If equivalent success is to be obtained with fluoridized salt, I think the same rationale applies.

Dr. Mills' suggestion that some vehicle other than communal water supplies be sought for the carriage of fluorine merits thoughtful consideration, but its use should be considered as a supplement to rather than a replacement for the fluoridation of water.

Until this subject ceases to be a matter for political debate and is returned to where it belongs, for decision by competent professional authority, we will make little progress. We will continue to compromise and to seek alternates for a proven and successful method of combating a major health problem in Canada.

JAMES M. MATHER, M.D., D.P.H.,
Professor of Preventive Medicine,
The University of British Columbia,
Vancouver B.C.,
April 30, 1959.

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## DOCTORS AND DRUGS

*To the Editor:*

Nickerson and Gemmell's article (*Canad. M. A. J.*, 80: 520, 1959) points out an important problem. Over the next generation, medicine will have to come to terms with the new attitude in the pharmaceutical industry, namely that drugs are big business and should be promoted like detergents and cars.

I would like to add one other aspect of the problem and elaborate on another.

1. Drug companies are sending fewer and fewer pharmacists out to do detail work. The new men appear to be uneducated in any scientific discipline, and oriented more towards salesmanship. Their talk is not the intelligent and considered opinion of men who know what they are talking about, but a parroting of the brain-washing they received in the last sales conference. They know not what they do.

2. Although there are undoubtedly good minds doing unbiased work with financial help from drug companies, some work, which has a note of indebtedness to a drug company at the end, must be suspect.

In support of this I would like to cite the following. I was recently approached by a well-known drug company and was told that a certain number of practising physicians were being asked to help evaluate an anti-emetic preparation. I was told that it had already been established that 10 mg. of this preparation had been found to be effective in about 90% of cases, and they wanted to find out whether 5 mg. would do as well. (The basis for this was a company brochure — unpublished.) The preparation contained 10 mg. per 5 c.c. The mother was to give half a teaspoonful (an utterly impossible dream). "Who is to be given the drug?" "Oh, anyone who is vomiting for any reason." "What about records?" "Oh, we don't expect a busy doctor to keep much in the way of records. We just want the number of cases treated and the number improved."

It seems patently obvious that such a company (I repeat, well known) would not go to a miscellaneous group of practising physicians with no training in research, ask them to give an inaccurate dose of a drug to a heterogeneous group of patients, and tell them that accurate records were unessential, if that company seriously wanted a true answer. And yet it is not at all impossible that the results may be printed as scientific proof. Possibly if others made their experiences known in this regard, this form of advertising, disguised as scientific research, might fall into disfavour.

J. S. SHARP, M.D.

3505 Broadway,
Lachine, Que.,
April 16, 1959.

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## MEDICINE OF THE PERSON

*To the Editor:*

Articles like "The Medicine of the Person" (*Canad. M. A. J.*, 80: 119, 1959) must be confusing to others as well as to myself. That attitude could be dangerous by encouraging lazy and sloppy psychology over painstaking and careful scientific medicine, to the detriment of the patient. We are trained, as physicians, to treat the body, and would like to turn over the mind and spirit to the minister of the gospel, who is trained in that field. With modern advances, it is difficult to know as much as we should, even in the one field.

I think every doctor knows instinctively that there is ample reason to separate the mind (the spirit or the soul) from the body. For the minister of the gospel, there are illustrations in the Bible of this sharp division between the spirit and the flesh (the body). What about *John* 3:6—"That which is born of the flesh is flesh; and that which is born of the Spirit is Spirit." Jesus intimates to Nicodemus that the spirit can be completely changed, renewed, etc., but the body continues to age. While He did cure maladies by faith, He also said that those that are sick need a physician. It is difficult to imagine Him recommending that an atheistic physician treat the Spirit.

The doctor then is trained to care for the *body*, which he cures, if possible. If the trouble is in the mind (or spirit), he may be able to help by wise counselling, but then he is performing a priestly service.

Canad. M. A. J.
June 1, 1959, vol. 80

Actually, I have many times perceived where the trouble lay, and wished I could refer the patient to some minister who could "renew a right spirit within him". This means "conversion", a being "born again in the spirit", and is not a simple matter. It is not like sending a patient to a surgeon to have his stomach removed, which can be done on anyone. To remove a spiritual defect such as avarice, dishonesty or selfishness, calls for the actual cutting to be done by the patient, no matter how much help he is given. Treatment of alcoholism, obesity and nicotine addiction is in this category.

If it were not true that the body and the mind (not the brain) are separate, then we would not have badly crippled people with indomitable spirits, such as F. D. Roosevelt and Helen Keller. Nor would we have people with broken spirits (alcoholics) and normal bodies. We must distinguish here between mental and organic disease of the nervous system or biochemical abnormalities which can be physically corrected, without aid by the patient himself.

All this is not to say we should not treat the patient kindly and honestly, and support, not break his spirit. But we should not confuse the two. We should encourage the patient to be responsible for his *own* spiritual life by attending to it regularly. It is an age of "do it yourself", and this is one field in which the patient can really accomplish something, with the aid of a spiritual adviser. He should not be encouraged to dump the problem in the doctor's lap with the attitude "I'm sick, you fix me up." We have a hard enough job looking after his physical ills.

A. C. WALSH, M.D.

99 Victoria Drive,
Vancouver 6, B.C.,
May 4, 1959.

## SPEECH THERAPY

*To the Editor:*

While reading the article "The Recovery Process in Aphasia" by C. M. Godfrey and E. Douglass in the April 15 number of the Journal (80: 618, 1959) the following comment was noted with regard to the state of speech therapy in Canada: "That the great need is now officially recognized in Canada by the medical profession is symbolized by the creation of a training course in speech pathology and audiology within the Faculty of Medicine at the University of Toronto." It is of the utmost concern that this statement not be taken as wholly representative of the facts. It should be pointed out that three years ago a course in speech pathology and audiology was established within the Faculty of Medicine at the Université de Montréal, antedating that at Toronto by two years. The admission requirements are high, namely an undergraduate degree in either Arts or Science. The course itself consists of two years of study, followed by four months' internship and the presentation of a thesis. An M.A. degree is awarded to successful candidates.

Because the course is given in French at a French university one may feel disinclined to accredit it as a good training ground for anyone other than French-speaking Canadians. It should be emphasized that English-speaking Canadians do attend and are welcomed. The two schools, as well as those which may be established in the future, have a lot to offer each other, but that is impossible if the existence of one should remain unrecognized and the credit for pioneering apparently absorbed by the other.

I hope that I have corrected any false impressions which have been engendered by the article quoted and that in future recognition will be given when due.

MHAIRI J. CLEGHORN,
Speech Therapy and Audiology,
Class of 1959,
Université de Montréal.

3160 St. Sulpice Rd.,
Montreal, Quebec,
April 28, 1959.

# THE LONDON LETTER

(*From our own correspondent*)

### WHOLE-TIME OR PART-TIME?

The part-time consultant is an anathema to the socialists who dream of the day when the National Health Service will be an entirely whole-time service. On the other hand, to all but the socialist minority in the profession, one of the saving features of the Service is the fact that it is possible for both consultant and general practitioner to practise within and without the Service. Incidentally, one of the practical advantages enjoyed by the part-time consultant is the rebate he obtains on his income tax as a result of being able to claim a corresponding proportion of his outgoings as professional expenses. In view of the current rate of taxation, it is not surprising that this factor alone weighs considerably with young consultants on first being appointed. For the vast majority of consultants, however, the deciding factor is the greater freedom and experience provided by part-time work.

To the dyed-in-the-red socialist, the part-time consultant is a symbol of class distinction. The mere fact that he exists means that patients are no longer treated on the basis of their needs but according to their capacity to pay. This, of course, is a gross travesty of the facts, but it was resurrected again in a short debate in the House of Commons recently. What is happening is that an increasing number of patients are deciding that it is worth while spending a little money on the advantages of seeing a consultant in his office rather than in hospital. As the consultant spends the same amount of time in hospital, no matter how many patients he has to see, these private patients are actually doing their less well-off fellow-citizens a good turn by reducing the number of patients to be seen in already crowded outpatient clinics. Admittedly a small minority of part-time consultants are taking advantage of the considerable degree of professional freedom they are allowed, but the vast majority are giving as good service to their hospital patients as to their private patients, and most of them are giving much more time to their hospitals than they are legally required to.

### DOMICILIARY CONSULTATIONS

One of the most useful features of the National Health Service is the provision it contains for domi-

ciliary consultations. Any general practitioner in the Service can call out a consultant – whether whole-time or part-time – in the Service to see a patient in his own home. The consultant receives a statutory fee for each consultation – over and above his annual remuneration as a consultant – but the number of visits he can pay in a year is limited to a given maximum figure. During the last few years there has been a considerable increase in the number of these domiciliary consultations, and some two years ago the Select Committee on Estimates – the financial watchdog of the House of Commons – recommended that the Minister of Health should inquire into the domiciliary consultation service to see if it was being misused. The committee has now issued a further report stating their dissatisfaction that the Minister has so far not acted on their suggestion. The Minister – quite rightly – has pointed out that it is not an easy matter to investigate, but the committee is insisting upon being given some facts. What precisely the facts, when produced, will mean is difficult to say. Admittedly the system is being abused to a certain extent. Many consultants themselves complain that they are asked by a general practitioner to go and see a patient, but the practitioner never turns up for the consultation. This, of course, is the antithesis of what a "consultation" should be and a state of affairs which should be dealt with firmly – by the profession itself. Indeed, there is a not inconsiderable number of consultants who now refuse to attend a domiciliary consultation unless the general practitioner agrees to be present. But how the Minister is to decide whether or not in a given case the patient's condition required a consultation is beyond the wit of man – at least medical man. Such, however, are the criteria upon which Parliament expects a medical service to be run. It is on occasions such as this that one's sympathy goes out to a Minister who tries to protect the clinician from the statistical miasma of politics.

### The Adolescent

Defining adolescents as "not only children in their final school years, but also young workers in their early years of employment", the British Pædiatric Association has published a report on their medical care. The report deprecates the custom of admitting adolescents to either adult wards or wards for young children. The authors of the report consider that more children's hospitals and children's departments should open small adolescent wards where male and female adolescents can be accommodated separately. They estimate that 10 to 20 adolescent beds would serve a total population of 500,000. Careful consideration was given to the adolescent unit in the Children's Medical Center in Boston, but it was "agreed that there would be no place in our medical service for an experiment of this kind". An appeal is made for more active participation of general practitioners and pædiatricians in the school medical service. It is noted that in Oxfordshire nearly all the periodical school medical examinations are conducted by general practitioners, and the view is expressed that "there is now in this country a large body of young, active, and instructed general practitioners who would do this work well and who would strengthen the diagnostic side of the service".

London, May 1959 — William A. R. Thomson

# OBITUARIES

DR. WILLIAM EWART CAMPBELL, prominent ophthalmologist, died on April 7 after a long illness. Born in Minnedosa, Manitoba in 1885, he was educated at the Manitoba Medical College, from which he graduated in 1912. From 1915 to 1919, he served with the R.C.A.M.C., and then did postgraduate work in Glasgow Royal Infirmary and Edinburgh and London. He practised in Winnipeg with the late Dr. S. W. Prowse, and from 1931 till 1947 he was on the teaching staff of the Faculty of Medicine. From 1939 to 1947, he was head of the department of ophthalmology. He was president of the Winnipeg Medical Society and the Manitoba Medical Association (1939-1940). He retired from teaching in 1947, but continued practice till 1957.

He is survived by his widow and four sons, one of whom, Dr. J. S. Campbell, practises at Fort William.

DR. WILLIAM CONE, 62, one of the world's leading brain surgeons and co-founder with Dr. Wilder Penfield of the Montreal Neurological Institute, died in his Montreal office on May 4 from a coronary sclerosis. A native of Iowa, Dr. Cone graduated from the State University of Iowa in 1922. While doing postgraduate work at the Presbyterian Hospital, New York, in 1924, he became associated with Dr. Penfield. In 1928 Dr. Cone went to Montreal as a lecturer in neurosurgery at McGill and became an assistant professor in 1929. During World War II he served overseas, and with Col. Colin K. Russell organized the No. 1 Neurological Hospital, of which he became the chief neurosurgeon with the rank of lieutenant-colonel. At the time of his death, Dr. Cone held the position of neurosurgeon-in-chief of the Montreal Neurological Institute and was professor of neurosurgery at McGill. He was also on the staff of the Royal Victoria Hospital and a consultant at the Montreal General, Herbert Reddy, Montreal Children's and Queen Elizabeth hospitals.

DR. ALWYN I. DANKS, 76, died at the General Hospital, Calgary, Alta., on April 16. A native of London, Ont., he graduated from the University of Western Ontario in 1907. After interning at the Victoria Hospital, London, Dr. Danks moved to Vancouver and then to Ymer and Salmo, B.C., where he practised for a few years. In 1911 he started his practice in Calgary. Dr. Danks was a member of the College of Physicians and Surgeons of Alberta, a member of the Alberta Medical Association and a past president of the Calgary Medical Association.

He is survived by his widow.

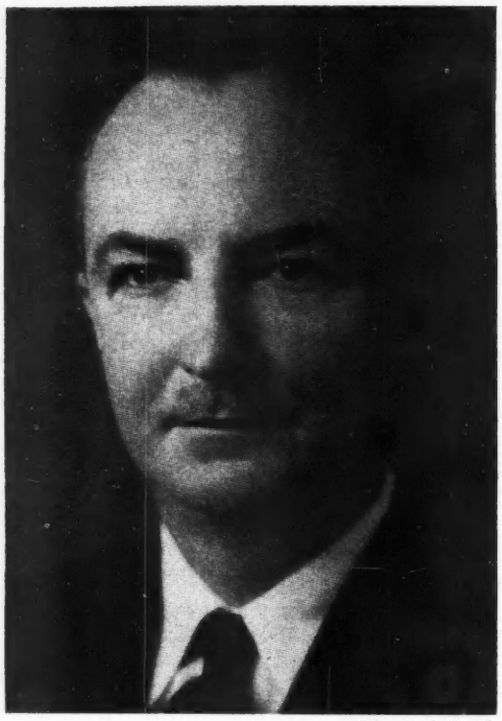
DR. S. WESLEY TAYLOR, 77, died on April 9. Born in Taylorvillage, N.B., he was educated at McGill University, where he graduated in 1911. Dr. Taylor was a life governor of the Queen Elizabeth Hospital, Montreal, and was associated with the Royal Victoria and Catherine Booth hospitals.

He is survived by his widow, two daughters and two sons.

DR. F. ARTHUR H. WILKINSON died in Montreal on April 7, after a prolonged illness. He was born in Sawyerville, Quebec, in 1906, the son of the late Reverend Arthur Wilkinson and Mrs. Wilkinson, who

Canad. M. A. J.
June 1, 1959, vol. 80

survives him. His early education took place in Coaticook, Quebec, Prescott, Ontario, and Perth, Ontario. In 1925, he attended Ottawa Normal School and taught school for a year before entering McGill University where he followed his pre-medical and medical course, graduating in 1933. His rotating internship was spent at the Royal Alexandra Hospital in Edmonton, whence he entered the department of anæsthesia at the Royal Victoria Hospital in Montreal. He was appointed assistant anæsthetist in 1936 and also assistant demonstrator in anæsthesia at McGill University. Shortly following these appointments he was granted leave of absence to study in London, where he became the first Canadian to be granted the diploma in anæsthesia of the Royal College of Surgeons of England. In 1939 Dr. Wilkinson succeeded Dr. W. B. Howell as chief anæsthetist at the Royal Victoria Hospital and was appointed lecturer in anæsthesia at McGill. In 1944 the division of anæsthesia became a full hospital department with Dr. Wilkinson as the first anæsthetist-in-chief. In this position and as an assistant professor of anæsthesia at McGill Dr. Wilkinson carried on until 1955 when he retired from active professional life after a period of ill health. He was appointed subsequently to the honorary consulting staff of the Royal Victoria Hospital.



*Blank & Stoller Ltd.*

**Dr. F. Arthur H. Wilkinson**

Dr. Wilkinson was a Fellow of the International College of Anæsthetists (1937) and a Fellow of the American College of Anesthetists (1943). He was a member of the Canadian Medical Association, the Montreal Medico-Chirurgical Society, the Canadian Anæsthetists' Society (President of the Quebec Division, 1948-1949), the American Society of Anesthesiologists and the International Anæsthesia Research Society.

Dr. Wilkinson was a person of quiet manner and habits, devoted to his work and to his many friends both within and outside the medical profession. The 20 years he devoted to anæsthesia witnessed the greatest advances in that field and Dr. Wilkinson made significant contributions to the training of many an anæsthetist who came under his guidance during this time. He possessed few interests other than his work but had a great attachment to the family farm at West Shefford, Quebec.

It is a matter of particular regret to his many friends to see the life of one who gave so much of himself to others come to a close so prematurely. He is survived by his mother and two brothers, W. Lawrence Wilkinson and Carlton G. Wilkinson, all of Montreal. W.H.P.H.

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# PROVINCIAL NEWS

## BRITISH COLUMBIA

It is hoped that Greater Victoria, including lower Vancouver Island below Duncan, and the Gulf islands, will have a Union Board of Health to represent this whole area and take over several separate health services now operating. Acting Mayor M. H. Mooney of Victoria announced this after a meeting of delegates from school boards, the city and the provincial health department.

Grace Hospital in Vancouver is at present building a new wing, which will include 30 beds, case rooms, operating rooms and other facilities. The federal government has given a grant of $191,038 towards this.

The Canadian Cancer Institute has announced a grant of $88,000 to British Columbia to be utilized for research in this province – an increase of $35,000 over the 1958 grant. The largest grant, $9670 for research and a $6250 fellowship, goes to Dr. D. K. Ford, who has been working on body cell structure at the G. F. Strong Research Laboratory at the University of British Columbia. Another major award of $11,584 is for work being done by Dr. H. K. Fidler, Director of the Vancouver General Hospital Pathological Laboratories, on smear tests for early diagnosis of lung cancer. Other grants and fellowships go to Drs. D. A. Boyes, Marvin Darrach, F. R. C. Johnstone, H. M. Kidd, J. W. Thomas, A. D. McKenzie, H. W. McIntosh, A. R. P. Patterson, Cyril Reid, Alan Rosenthal, P. S. Vassar, S. H. Zbarsky and A. F. Burton.

The Royal Jubilee Hospital of Victoria is conducting a campaign for funds for additional buildings. Their objective is $410,000, of which they have already raised about half. The total cost of building will be $2,500,000.

Dr. G. F. Amyot, Deputy Minister of Health for British Columbia, speaking at the British Columbia Public Health Institute convention, gave some interesting and encouraging figures on British Columbia health conditions. The death rate in 1958 dropped from 9.2 per 1000 in 1957 to 8.9 per 1000, the lowest in the past 25 years.

Two hundred delegates from public health services heard that tuberculosis mortality has dropped 75%

from the 1952 rate, while the case rate of tuberculosis has dropped steadily. In 1957, it was 74.8 for 100,000 of population, while in 1958 it was 62.6 per 100,000.

"For the first time in history, we did not have a single case of diphtheria in British Columbia in 1958," said Dr. Amyot. Polio incidence dropped from 16% per 100,000 in 1954 to 0.9% per 100,000 in 1958. Here especially, he urged the need for a more adequate degree of immunization.

Dr. and Mrs. R. B. Kerr have left for Africa. Dr. Kerr, Professor of Medicine at the University of British Columbia, is the Sir Arthur Sims Travelling Commonwealth Professor, and will lecture and teach at university and hospital centres in Commonwealth countries in Africa.

Dr. Kerr goes to Scotland in July where he will address the joint British and Canadian Medical Associations meeting. They return after this to Africa, to complete Dr. Kerr's engagements, and return to Vancouver in September.

Dr. A. John Nelson, British Columbia Electric's director of medical services, received a fellowship in the Industrial Medical Association at the Association's Annual Meeting in Chicago on April 29.

An item in the federal budget may have been noticed by all of us – it is the item dealing with hospital bills. If the patient pays these himself, they can still be used as exemptions in income tax returns. If they are paid by the government insurance plans, e.g. the B.C.H.I.S., they can no longer be included in exemptions, except that extra payments above the government allowance are still usable for exemption.

This is a change from the former rules, when the payment made by B.C.H.I.S. or other government insurance plan could be used for exemption.

A case of typhoid fever has occurred in the North Vancouver District area, the first in five years on the North Shore, and a typhoid carrier is being sought for. The child recovered. No other cases in the family have developed.

We note with pleasure the fact that Dr. D. H. Copp, head of the department of physiology at the University of British Columbia, has been elected to the Fellowship of the Royal Society of Canada. This is the highest scientific award in Canada.

Establishment of an educational-medical centre at the University of British Columbia for mentally retarded children has been proposed by Dr. J. A. Richardson, professor of special education.

Dr. Richardson told the Vancouver Association for Retarded Children that, with proper training, many retarded children could become self-supporting citizens. There would be a centre to deal with educational and psychological problems of retarded youngsters and a second centre in the university hospital for diagnostic and medical research work on children. There would also be a travelling team from the centre to help parents and teachers outside Vancouver. The educational centre, near the university hospital, would train teachers of mentally retarded children and give parents advice on education and development of their children. Doctors at the university are hoping to start work shortly with pre-school children on the causes of retardation.

He estimated that about 3% of B.C.'s school population is retarded to some degree – that is, significantly below the average range in general intellectual ability. Only 2½% can be educated in special classes with a modified school program. The others require special training.

The Vancouver City Council has called on the federal and provincial governments for aid to Vancouver in the building of a hospital of 200 beds for the chronically ill. The Council has also started a study of the entire problem of bed shortages in metropolitan hospitals. This is growing in Vancouver, as Dr. Stewart Murray pointed out to the Council. Dr. Murray said that the whole problem must be dealt with on a metropolitan basis, and not on the basis of separate municipal needs.

At the Annual Meeting of the Royal Columbian Hospital in New Westminster, the finance committee told the Board that they had a $90,000 bank overdraft as at December 31, 1958, and continuing heavy monthly deficits.

The chairman pointed out that under the existing law, the hospital must provide complete hospitalization at prices fixed by the B.C.H.I.S. and that the hospital cannot legally raise these prices. He insisted that the government, which collects the hospital tax, is responsible for guaranteeing hospital care and its cost. He stated that, unless the government contributes more towards operating costs, the hospital is facing bankruptcy.

J. H. MACDERMOT

## ALBERTA

A little-known service of the Alberta Department of Education is a library of school textbooks in oversized print for loan to students with defective eyesight. The majority of sight-handicapped students attend special classes in Calgary and Edmonton, where the school boards receive an annual grant of $2500 per special classroom. The central library is for the use of students in other areas, books pertaining to the basic subjects in grades II to IX being available. An idea of the value of the library is given by the student edition of the Winston Dictionary, which weighs 1½ lb. and sells for $1.25, as compared with the large-print version which weighs 11 lb. and sells for $35.00.

The two-day Refresher Course held in Calgary on April 17 and 18 was a great success, with a large registration from the southern area of the province. The speakers were drawn chiefly from the Calgary area. The guest speakers were Dr. Herbert Schmidt, professor of medicine, Mayo Foundation, Rochester, Minnesota, and Dr. Ivan Smith, director, Ontario Cancer Foundation, London, Ontario, sponsored by the Alberta Tuberculosis Association and the Canadian Cancer Society (Alberta Division). The meeting was a joint effort of the C.M.A., Alberta Division, and the University of Alberta Faculty of Medicine in conjunction with the Calgary Medical Society. The previous five-day refresher courses which had been held in Edmonton for many years were discontinued this year in favour of two-day courses on special subjects. The response to this refresher course further indicates the popularity of the shorter courses.

Canad. M. A. J.
June 1, 1959, vol. 80

Dr. Jan Weijer, professor of horticulture at the University of Alberta, has been awarded a $4200 research grant by the National Cancer Institute of Canada for fundamental studies in the field of microbial genetics. Dr. Weijer's research is concerned with the effects of small amounts of radiation on living cells. Red bread mould, *Neurospora crassa*, is the organism he will continue to work with.

Dr. W. C. Campbell, president-elect of the Alberta Division, C.M.A., is accompanied on his tour of the various districts by the president of the Council of the College of Physicians and Surgeons of Alberta together with Dr. J. W. Kettlewell, assistant secretary of the Alberta Division. Completing the party are: Dr. M. Davis, Medicine Hat, and Dr. Howard McEwen, Calgary, who carry the clinical part of the program.

The third Annual Seminar on Mental Health in Industry was held in Calgary on March 31 and April 1. These seminars, sponsored by the Canadian Mental Health Association, Alberta Division, and held in both Calgary and Edmonton, have proven very popular and are esteemed as valuable contributions to industrial welfare. Registration at the recent Calgary meeting which was convened by Dr. David Lander of Black Diamond, Alberta, was 150, made up of executives, personnel men, industrial doctors and nurses, and hospital administrators. The speakers were recruited from university and professional ranks.

The Alberta Veterinary Medical Association has extended an invitation to all members of the Canadian Medical Association, Alberta Division, to attend their annual convention on June 20, 1959. Many of the papers to be presented at the meeting concern infections which are common to man and animals.

The School of Nursing at the University of Alberta Hospital in Edmonton has announced plans regarding courses for nurses on the treatment of premature infants.

Dr. J. B. T. Wood of High Prairie has been elected president of the Council of the College of Physicians and Surgeons. Dr. J. R. Ibberson of Calgary is Vice-president. New members on Council are: Dr. F. M. Christie, Lethbridge; Dr. J. D. Wallace, Camrose; Dr. J. A. Noakes, Calgary; and Dr. M. M. Sereda, Edmonton. Other continuing members are: Dr. G. E. Foster, Castor, and Dr. B. M. MacLeod, Brooks.

Council has recently negotiated a new agreement with the government for payment of $24 per annum for the care of old-age and other pensioners. In the new contract, in case of third-party responsibility, such as car accident, a physician will be able to bill directly the insurance company or other responsible third party.

W. B. PARSONS

## SASKATCHEWAN

The Department of Public Health of Saskatchewan has accepted the new 1959 schedule of fees of the College of Physicians and Surgeons of Saskatchewan for use as of April 1, 1959, by government agencies.

Last year for the first time, payment of physicians' accounts for services rendered to persons receiving old age security and blind pensioners' supplemental allowances as well as mothers' allowances were paid on the basis of 50% of the fee schedule rather than the per capita basis used previously.

A committee met to review the experience resulting from this change, and noted that this new method of payment had proven acceptable, administratively sound, and less cumbersome than the previous method. The costs had remained well within the anticipated limits for the period under study.

The negotiating committee of the College has been advised that the Medical Services Division of the provincial government wishes to limit the liability of the department for payment of in-hospital visits by physicians to 14 days. This thinking was based on the premise that the patient while in hospital for longer than 14 days could make alternate arrangements in regard to living expenses, and especially since the beneficiaries while in hospital would continue to receive the cash allowance made to them under the particular categorical program provided for them. As an example, an old age security pensioner receiving the provincial supplemental allowance would also continue to receive his $55 per month basic pension. This would be done on the basis of hospital admission, not the disease. It is estimated that limiting the department's responsibility to 14 days would lead to a saving of $90,000. After 14 days, the patient may be treated and charged as a private patient.

Another change in benefit is being introduced, as it would appear that the amount of drugs being used has increased beyond a reasonable basic and essential level. In 1948, the provincial government limited its payment for drugs to 80% of the charge made by the pharmacist. From April 1, 1959, the government's contribution will be 50% of the pharmacist's charge. The balance will be the responsibility of the beneficiary. In cases where demonstrable hardship would be created, the department, we understand, is prepared to consider an application for additional assistance in the case of essential and expensive drugs.

There will be no charge for insulin and tolbutamide in treating diabetes, or injectable liver and injectable vitamin $B_{12}$ for use in treating pernicious anæmia. These drugs are supplied by the Department of Public Health.

In the Saskatchewan legislature, Mr. J. W. Gardiner asked leave to ask adjournment of the Assembly for the purpose of discussing a matter of urgent public importance, namely, that effective April 1, changes had been made in regulations relating to recipients of old age security supplemental allowances, blind persons' allowances and mothers' allowances, which would have the effect of increasing drug and medical expenses to individuals receiving such payments.

The point of order being raised by the Hon. T. C. Douglas, that an opportunity of discussing this matter would be presented during consideration of the estimates of the Department of Social Welfare and Rehabilitation and the Committee of Supply, the Speaker ruled that the point was well taken, and there was not sufficient urgency, since an early opportunity would be provided for discussion of the matter raised. The Speaker therefore declined to put the motion from the Chair.

Mr. Gardiner felt that the change could affect the welfare of thousands of Saskatchewan citizens, and

quite possibly all the municipalities in Saskatchewan, and as such, felt it was of sufficient public interest to make his request. Mr. Gardiner was supported by the Opposition Leader, Mr. A. H. McDonald, who said, "The new policy is already in effect and it is of sufficient importance to be debated now."

The Saskatchewan Medical Bonspiel was held on March 14 and 15 at the Wascana Winter Club in Regina. Thirty-one rinks were entered. The thanks of the profession of the provinces are extended to the Schering Corporation for their help in making this bonspiel possible.

The Saskatchewan Hospitalization Act has been amended so that now any hospital not submitting a statement of its financial transaction and summary of hospital services provided during the preceding month by the 15th day of each month, will be subject to a penalty. By this penalty the Minister may deduct from the payment to be made to the hospital under the Saskatchewan Hospitalization Act the sum of $10, and in addition a sum of $5 for each day after the 15th day of the month during which the default continues up to a maximum of 10 days, if sufficient reason is not given to explain the delay.

We understand that this legislation was objected to by the Saskatchewan Hospital Association.

Dr. W. P. Thompson, president of the University of Saskatchewan, was the guest speaker at the Annual Meeting of the University of Saskatchewan Alumni Association's Convocation Day Banquet on May 8.

Renovations to the north end of the Saskatoon City Hospital's west wing to cost an estimated $95,000 have been approved by the City Council. The renovations are part of a $210,000 program, of which three levels of government are expected to provide one-third each.

Although the grants have not as yet been approved by the federal and provincial governments, the proposed renovations to the north end of the west wing were considered sufficiently important to start without prior approval of the grants being given. Renovation would include the moving of the isolation ward into the hospital and the destruction of the present isolation area, which is a wooden structure on the grounds of the hospital. The hospital Board of Governors' ultimate intention is to meet the cost of the project entirely from hospital funds.

A Conference on the Aged and on Long-term Illness will be held on June 24, 25, and 26 at Saskatchewan House in Regina. Representatives from agencies, organizations and government, together with selected individuals, all with an interest in the problems to be discussed, are being invited. Attendance will be limited to 160 delegates.

The main topics will be "The changing status of the aged in modern society", "The new look in geriatric care" and "The activity needs of older people".

Special guest speakers will be invited to introduce the subjects, and questions related to these subjects will be discussed and reported upon by small groups composed of conference delegates.

The Animal Husbandry Department of the University of Saskatchewan moved into its new building on May 15. This building has been under construction during the winter.

G. W. PEACOCK

## MANITOBA

The annual report of the Manitoba Cancer Treatment and Research Foundation shows that its work is carried on in research, education, medical services, physics services and the statistical and recording service. Lectures on the principles and practice of radiotherapy and instructions in the application of radiotherapy are given to fourth-year students but it is felt that the amount of teaching in this subject is less than it should be. Cancer teaching Fellows in the Winnipeg General and St. Boniface hospitals assist in clinical instruction on cancer problems. The first resident in radiotherapy has been appointed. Mrs. E. M. Macdonald has for many years given instruction in fields related to cancer to nurses in several Winnipeg hospitals. Training is given to young women who wish to be certified as radiotherapeutic technicians by the Canadian Association of Radiological Technicians.

Cobalt-60 beam therapy units as well as x-ray therapy units are used at the Winnipeg General and St. Boniface hospitals. Radium was supplied for the treatment of 81 patients and radioactive gold grains were used on three patients. A radioactive isotope service is supplied at the Medical College. At the end of 1957, 36,138 cancer cases were on record at the Central Cancer Registry. Tumour services operate in the Winnipeg General and St. Boniface hospitals. A considerable volume of research work was carried on by the Cancer Relief and Research Institute.

The 48th annual meeting of the Sanatorium Board of Manitoba was held on April 10. The medical director, Dr. E. L. Ross, stated that the number of tuberculosis deaths during 1958 was the lowest ever reported in Manitoba and one of the lowest for Canada, 4.7 per 100,000 population. The actual number of such deaths was 41, whereas in 1945 the number was 314. The factor chiefly responsible for this change is the introduction of antituberculous drugs. In Manitoba tuberculosis has become more serious for older people, especially men. Of the 41 deaths, 30 were in men and one-fourth of all deaths were in males over 70. Six deaths occurred under the age of nine, and four of these were due to meningitis. The reduction in treatment days resulted in a continued increase in vacant beds in sanatoria, amounting to 200 by the end of December. Wards containing 118 beds in two sanatoria have been designated as extended treatment – general hospital sections.

The Manitoba government has asked the Sanatorium Board to construct and operate a rehabilitation hospital in Winnipeg. An advisory planning committee, the medical members of which have been approved by the Manitoba Medical Association, has been set up as follows: Dr. F. Hartley Smith, Chairman; Dr. L. G. Bell, Dean, Faculty of Medicine, University of Manitoba; Dr. C. D. Lees, Workmen's Compensation Board; Dr. E. L. Ross, medical director, Sanatorium Board; Mr. Walter N. Boyd, co-ordinator of rehabilitation services, Province of Manitoba; Dr. M. R. Elliott, Deputy Minister of Health and Public Welfare; Mr. T. A. J. Cunnings, executive director, Sanatorium Board of Manitoba.

ROSS MITCHELL

Canad. M. A. J.
June 1, 1959, vol. 80

## ONTARIO

Mr. H. David Archibald, executive director of the Alcoholism Research Foundation of Ontario, in his capacity as president of the North American Association of Alcoholism Programs has announced that a grant of $66,000 is to be made to the Association over the next five years by the United States Department of Health, Education and Welfare through the National Institute of Mental Health.

Director of the five-year research project will be Mr. John R. Seeley, director of research for the Alcoholism Research Foundation of Ontario. Mr. Seeley, a sociologist, has already done considerable work on classification and nomenclature in the alcoholism field, and has been associated with Mark Keller of Yale University in the recent publication of a book entitled *The Alcohol Language*.

The National Cancer Institute of Canada has awarded a grant of $5450 for cancer research to Dr. Edward A. Sellars, head of the pharmacology department, University of Toronto, and Dr. Edward Schonbaum, assistant professor of medical research. Their experiments will be concerned with production of thyroid dependent tumours in experimental animals. Most of the work will be carried out at the Charles H. Best Institute.

The College of Physicians and Surgeons of Ontario has elected Dr. J. J. Day, Ottawa, president, and Dr. G. E. Hobbs, London, vice-president.

Committees appointed were: *Executive*, Dr. Day, chairman; Dr. J. S. Delahaye, Kingston; Dr. Hobbs; Dr. R. M. Mitchell, Sudbury; Dr. A. B. Whytock, Niagara Falls; Discipline, Dr. Mitchell, chairman, Dr. C. E. Bond, Toronto, Dr. W. C. Givens, Toronto, Dr. J. A. Hannah, Toronto; *Education and Registration*, Dr. W. Ford Connell, Kingston, chairman, Dr. J. A. Dauphinee, Toronto, Dr. F. L. Rose, London, Dr. D. S. Wigle, Windsor, Dr. E. R. S. Wyatt, Elmira; *Legislation*, Dr. Dauphinee, chairman, Dr. Hannah, Dr. Rose, Dr. J. W. R. Webster, Ottawa, Dr. Wigle; *Finance, Printing and Property*, Dr. Webster, chairman, Dr. Delahaye, Dr. Forrest, Dr. Givens, Dr. Wyatt.

Dr. G. W. O. Moss, deputy medical officer of the Toronto Department of Health, has been presented with a $500 travelling fellowship in geriatrics by the Toronto Section of the National Council of Jewish Women of Canada.

LILLIAN A. CHASE

### LAKEHEAD NEWS

On April 16 and 17, Drs. Leo Mahoney and Paul O'Sullivan of Toronto were at the Lakehead for two clinical days. On the morning of the 16th, clinics were held in the Health Centre in Fort William with Dr. Campbell Cameron as clinical clerk. On the morning of the 17th, the clinics were held at the Port Arthur General Hospital, with Dr. Campbell Pearson as clinical clerk. The subject on both mornings was gastro-intestinal disease. On the evening of the 16th, a meeting was held at the Port Arthur General Hospital with Dr. Keith Nancekivell in the chair, and papers were presented by both Dr. Mahoney and Dr. O'Sullivan on gastroscopy, and ulcerative colitis. The meeting was well attended in spite of the Stanley Cup playoff game being broadcast on the same evening.

C. M. JOHNSTON

## QUEBEC

The third 1958-1959 meeting of the Board of Directors, Quebec Division, Canadian Medical Association, was held on April 4 in the Faculty Club in Montreal. This was the last meeting before the annual meeting of our Division which took place in Chicoutimi on May 7 to 9. The scientific sessions at this, the best attended Quebec divisional meeting ever, were held at the Hôtel-Dieu St-Vallier in Chicoutimi. There was simultaneous interpretation in French and English, and the special guests included Dr. Paul Milliez of the University of Paris, Dr. John O'Connor of London, England, and Dr. René Wegria of the University of St. Louis. At the same meeting, Dr. Sylvio LeBlond, chief of the department of medicine of the Hôtel-Dieu St-Vallier, Chicoutimi, was installed as president of the Quebec Division of the Canadian Medical Association, succeeding Dr. F. Walter FitzGerald of Lachute.

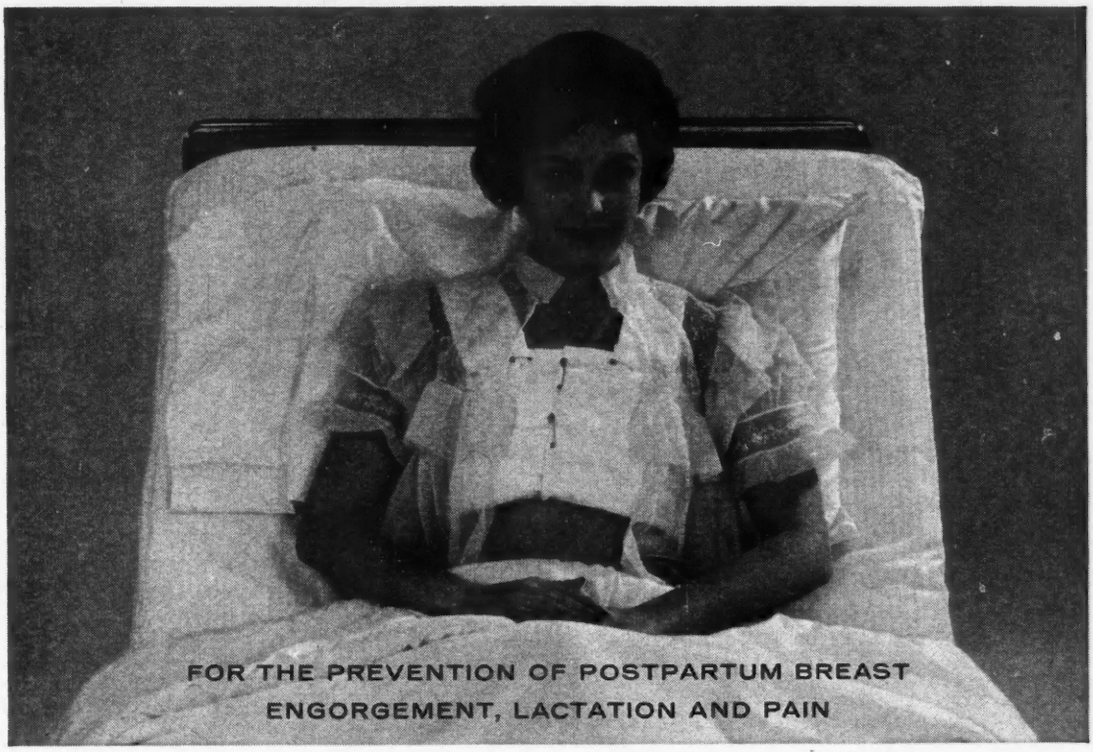
Divisional committees are at work on arrangements for the 13th General Assembly of the World Medical Association. This will be held at the Queen Elizabeth Hotel, Montreal, from September 6 to 12 of this year. Our Division will be responsible for entertainment, transportation and the ladies' program.

On April 6, the regular meeting of the Montreal Medico-Chirurgical Society was of particular significance, being designated as the "Past Presidents' Night". The regular scientific session of the evening was preceded by a society dinner held at the Faculty Club of McGill University. Fourteen past presidents of the Montreal Medico-Chirurgical Society were honoured by the Society at this dinner in being presented with "Past President" emblems. Dr. G. J. Strean, the current president, was in the chair and the past presidents so honoured were Drs. D. S. Lewis, J. C. Meakins, C. A. Peters, John Fraser, E. G. D. Murray, A. D. Campbell, L. C. Montgomery, E. H. Mason, J. S. L. Browne, R. E. Powell, S. G. Ross, W. J. McNally, H. S. Mitchell and Walter Scriver.

A symposium on hypertension – a practical approach to diagnosis and treatment – was presented by a panel of local experts at Queen Mary Veterans Hospital following this memorable dinner. The moderator was Dr. Stewart Reid of the Montreal General Hospital and the panelists were Drs. Jacques Genest, J. C. Luke, B. A. Levitan and S. A. MacDonald. They considered in detail practical problems of hypertension, what it means, what investigations should be done on a patient to determine treatment, how to cope with complications, the different methods of treatment – in brief, practical problems that everyone in our profession faces at one time or another. It was an excellent presentation and there was a very large attendance.

The last session of the season of the Montreal Medico-Chirurgical Society was held on April 27 at the Montreal General Hospital. The meeting was preceded by a meal at 6.30 p.m., and the scientific session at 7.30 p.m. took the form of a formal discussion on the implications of universal health insurance on medical education. The moderator was Dr. Douglas

*(Continued on page 928)*

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**—". . . causes fewer gastrointestinal upsets[1] than does diethylstilbestrol."**

Schneeberg and his associates[2] gave Vallestril to 198 patients with postpartum breast engorgement, pain and lactation. They reported: "The patients . . . achieved over-all results . . . somewhat better than those in patients receiving 3 mg. of diethylstilbestrol. . . . Untoward effects, even when large doses were used, were rare. The 'slight bleeding' recorded . . . was probably of no significance and was doubtless no more than would have occurred in these individuals without therapy."

Napp, Goldfarb and Massell[3] conducted a controlled study in which 207 postpartum patients received Vallestril, 213 patients were given diethylstilbestrol and 193 patients did not receive hormone therapy. "The stilbestrol treated group showed a significantly greater incidence both of interim bleeding and of hypermenorrhea than did the control or the Vallestril treated groups."

These authors concluded that "Vallestril is a superior synthetic estrogen for the suppression of lactation. The low incidence of interim bleeding and of hypermenorrhea constitute a most important characteristic of the drug."

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1. Council on Drugs: New and Nonofficial Drugs 1958. Methallenestril, Philadelphia, J. B. Lippincott Company, 1958, pp. 477-478.

2. Schneeberg, N. G.; Perczek, L.; Nodine, J. H., and Perloff, W. H.: Methallenestril, a New Synthetic Estrogen, J.A.M.A. 161:1062 (July 14) 1956.

3. Napp, E. E.; Goldfarb, A. F., and Massell, G.: The Parenteral Use of Methallenestril for the Suppression of Lactation. A New Approach, West. J. Surg. 64:492 (Sept.) 1956.

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Canad. M. A. J.
June 1, 1959, vol. 80

*(Continued from page 926)*

G. Cameron, physician-in-chief of the Montreal General Hospital and professor of medicine, McGill University, and members of the panel were: Dr. Ray Farquharson, professor of medicine, University of Toronto, and chairman of the Medical Division, N.R.C.; Dr. Newell Philpott, professor emeritus of obstetrics and gynæcology, McGill University, and president of the American College of Surgeons; and Dr. Renaud Lemieux of Quebec City, president elect of the World Medical Association. They discussed critically and constructively the universal and growing problem in medical economics — the decreasing number of patients available for the training of new doctors. The problems are expanding as more persons and provinces come under hospital insurance plans, where patients demand treatment only by fully qualified physicians and surgeons. The concept of medical training on the North American continent has developed on the basis of "learn by doing". The panel agreed that this is the best method of training on the undergraduate as well as on the graduate level and every effort must be made to assure that this will in no way be adversely affected by any or all sources of health insurance. It is most important that at all levels of medical training the patient should still have the benefit of the staff in training. This is to the advantage of the patient as well as of the men in training. It was therefore felt that the developing situation could be greatly eased if governments took positive action by assisting training hospitals. All panelists strongly favoured "the team system" where a group of doctors, the young as well as the experienced, work together.

The presentation by the panel was followed by a lively and constructive discussion. Among those participating in the discussion were: Dr. J. J. Lussier, Dean of medicine, University of Ottawa; Dr. Lloyd G. Stevenson, Dean of medicine, McGill University; Dr. Roma Amyot, Editor of *l'Union Médicale;* and Dr. R. R. Struthers, recognized expert on medical education, of Toronto.

The annual meeting of the Montreal Physiological Society was held in the laboratories of Ayerst, McKenna and Harrison Limited, on April 27. Because of the conflict with the Symposium referred to above, your reporter was unfortunately unable to attend this meeting. As has been the custom in past years, the first part of the evening was devoted to visits to various research laboratories. Then followed a business meeting during which Dr. A. D'Iorio was elected president, Dr. Eleanor Harpur, vice-president, and Dr. T. L. Sourkes, secretary of the Society. The main feature of the evening was an address by the retiring president, Dr. A. S. V. Burgen, who spoke on the kinetics of salivary secretion.

Your reporter has previously reported on the extensions now planned to Montreal's Jean-Talon Hospital. The official cornerstone laying for the large extension to this hospital took place on April 30 and was indeed an historic event. The cornerstone was taken from the Château de Boulay in Alsace-Lorraine which was formerly the property of Jean Talon, a famous Intendant of New France. The laying of the cornerstone was carried out by the present Marquis de Montcalm, who had come to Montreal especially for this purpose. Many dignitaries of the City and the Province participated in this historic event. The cornerstone laying also officially opened an intensive subscription campaign towards the new ten-storey wing of this hospital, construction of which is now well under way.

Some two hundred Canadian delegates recently attended the 61st annual meeting of the Victorian Order of Nurses in Montreal. The theme of this meeting is "The place of the V.O.N. in the developing pattern for health care in Canada". Subjects under discussion include how the V.O.N. can work more closely with the medical profession in order to give more effective care; extension of V.O.N. boundaries for home care; economic problems as they are related to V.O.N. care; improving the public relations for the V.O.N. service throughout the country.

Congratulations are in order for honours recently bestowed on members of our Division. Dr. Walter Scriver, emeritus professor of medicine, McGill University, was recently elected second vice-president of the American College of Physicians. Dr. Scriver has been a governor of the College for nine years. At the same American College of Physicians meeting in Chicago, Dr. W. H. P. Hill of the Royal Victoria Hospital was elected a governor for the College for a three-year term.

Dr. Lewis C. Haslam, chief medical officer of Canadian Industries Limited, Montreal, was recently elected a fellow of the Industrial Medical Association. Dr. Baruch Silverman of Montreal was named the recipient of the 1959 Buzzell Award for his contribution to home and school aims and ideals. Dr. Silverman is director of the Mental Hygiene Institute in Montreal and associate professor of psychiatry at McGill University.

A. H. NEUFELD

### *The College of Physicians and Surgeons of the Province of Quebec*

The Provincial Board of the College of Physicians and Surgeons held a two-day meeting on April 8 and 9. Under the direction of Mr. Noël Dorian, Q.C., M.P., the draft of the Medical Act was completed.

At Dr. A. Rioux's suggestion, a board composed of physicians and lawyers will be formed to advise any member of the profession threatened with a lawsuit involving medical practice should he feel the need of such advice. This would normally apply only to uninsured doctors, because the insured are provided with such expert service. The function of the board is purely advisory; it will not undertake the defence of the case or attempt settlement. This service will be without charge; the expenses involved will be paid by the College.

A Committee on Medical Economics was created: it is composed of four governors in addition to the President and of a representative of the Quebec divisions of the Canadian Medical Association and of the Association des Médecins de Langue Française du Canada. The Committee will deal on a broad basis with all economic problems involving the profession and will offer suggestions to the Provincial Board for any action deemed possible or advisable; it is authorized to call on any experts, medical, legal or economic, for consultation or advice. The governors chosen are Drs. R. Décarie, J.-B. Jobin, A. Rioux and R.-L. DuBerger.

*(Continued on page 930)*

Canad. M. A. J.
June 1, 1959, vol. 80

*(Continued from page 928)*

The schedule of fees was brought up for discussion. The answers obtained from the various specialties comprise 100 typewritten pages; it was felt that a discussion by the full Board was impossible, and a committee was formed to deal with the problem. This will be without doubt a long task. In the meantime, to protect the physicians in their dealings with insurance companies, government and law courts, a flat increase of 35% was decreed over the 1952 schedule which has now become completely unrealistic and obsolete.

Dr. J.-E. Lemieux of Mont-Laurier read a well-written and clear report on the relations existing between the administration and the medical staff in smaller hospitals. This led to a very interesting discussion. Many excellent suggestions were made for the protection of members of the staff against unjustified dismissals, favouritism and, in some cases, more or less open persecution. It is a well-known fact that, in this province, the administration in a great many cases owns the hospital; as property owners they have undeniable rights, but these rights should not be abused. Doctors who, over a span of years, have contributed to the hospital's reputation have acquired rights of their own. If they feel that they are unjustly molested, they will naturally turn to their College for protection. Therein lies a vital problem, and Dr. Lemieux deserves great credit for having brought it out into the open.

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# BOOK REVIEWS

**THE CARE OF THE GERIATRIC PATIENT. Edited by E. V. Cowdry, Washington University School of Medicine, Seattle, Wash. 438 pp. The C. V. Mosby Company, St. Louis, Mo., 1958. $8.00.**

This admirably written and edited book should be read from cover to cover by any practitioner or specialist who sees older people in his practice. It is well bound and a handy size for carrying in the pocket to read at odd moments. The best way to explain its scope and range is to list the chapters, which deal with the physician and the geriatric patient, psychological aspects in management, medical aspects, mental aspects, surgical aspects, anæsthesia, drugs, nutritional requirements, dental care, genetic factors influencing treatment, geriatric nursing, hospitalization, nursing homes, proprietary and non-profit homes, home care, rehabilitation, training in geriatrics, organizations and services for older people and geriatrics around the world.

All the chapters are well written. The excellent cohesiveness obtained between the chapters is unusual in any 22-author volume. Each chapter is practical, detailed recommendations for investigation, management and treatment being included.

In the preface, the editor states that "It has been said that in no other aspect of life is action delayed so far after discovery." The reviewer would like to issue a word of caution to the reader. It has been known for many years that a serious and increasing problem exists about older people. In the social field this problem has been well documented and the editor's statement is true in this field. However, almost the reverse is true in the field of medicine. Action has proceeded almost precipitously ahead of knowledge. The authors all seem conscious of this fact. The three most crippling and killing diseases of older people are osteoarthritis, atherosclerosis and new growths. We are only on the threshold of knowledge about these and many other long-term diseases. Thus the chapter on medicine suffers from lack of basic knowledge, though the author has done his best with the available knowledge. But with the limited facts available the judgment of any experienced clinician is probably the best guide to medical investigation and management of older patients.

The chapter on psychological aspects suffers somewhat from a related problem. Most of the available knowledge is statistical. Unwarranted generalizations can be, and are, made from such information. For example, the dominance of atherosclerosis as a cause of senescence distorts any data which do not sort out this factor by correlation of autopsy findings with previous findings during life. This has not been done adequately to date, so that "usual" findings are often confused with "normal" findings.

The chapters on the social aspects of geriatrics speak only of the American scene but their application is general and Canadian readers can obtain useful information from all of them.

**GYNECOLOGIC RADIOGRAPHY. Jean d'Alsace and J. Garcia-Calderon. 188 pp. Illust. Paul B. Hoeber, Inc., Medical Book Department of Harper & Brothers, New York, 1959. $8.00.**

To those who regard hysterosalpingography as of use only in the investigation of infertility, this little book will be a revelation. The chapters relating to normal anatomy and its variations, congenital malformations, intrauterine synechiæ, fibroids and polyps, hyperplasia of the endometrium and endometriosis, cervical cancer and cancer of the corpus uteri are all particularly good. One of the best chapters is that dealing with cervical cancer and cancer of the corpus uteri. Direct quotation from this will indicate its content: "There are many authors who are still sceptical about the value of hysterography for cancer detection; some even consider hysterography dangerous and of no diagnostic value whatever. By contraries, we have all too frequently seen curettages yield nonsuspicious fragments, thereby delaying necessary intervention." "Hysterography has its limitations, but if skilfully performed and interpreted, it should enable us to diagnose cancer in its early stages." The final chapter is devoted to a most instructive account of radiography of the female breast. It is to be hoped that it will stimulate a more widespread interest in the subject.

The profuse illustrations are of a very high quality, with clear legends. The text is concise and the translation from the original French is excellent. The only possible criticism is of the title. The work does not encompass the entire field of gynæcological radiography, as reference to the growing literature on angiography of the uterus and adnexa would readily reveal. Likewise it is not merely a book on radiography but on radiology.

There is no index, but this is not a great disadvantage in a volume of this type, with its numerous short chapters.

The book is highly recommended to all who perform hysterosalpingography, and it is a delight to read.

*(Continued on page 932)*

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Canad. M. A. J.
June 1, 1959, vol. 80

*(Continued from page 930)*

**TREATMENT OF CANCER AND ALLIED DISEASES. Vol. 1, Principles of Treatment. Edited by George T. Pack and Irving M. Ariel. 646 pp. Illust. 2nd ed. Paul B. Hoeber, Inc., Medical Book Department of Harper & Brothers, New York, 1958. $22.50.**

The new edition of the classical work by Pack and Ariel is now available after an interval of 18 years. It is not surprising, therefore, that this volume is virtually a new book. The writing is catholic in style and the subject matter ranges from the organization of cancer programs through diagnosis and pathology to aspects of treatment by surgical, radiation and chemotherapeutic methods, ending on the very sound note of the methods used in reporting results of cancer treatment. The book is lavishly illustrated with radiographs, charts and photographs, many of which are well known. (Figure 20-10 would be much more valuable if it were the right way up.)

It is difficult to be sure for whom this volume was prepared, for although the title is *Principles of Treatment*, remarkably few principles are enunciated. On the other hand, there is a wealth of detailed information, particularly in Chapters 13 to 30 dealing with radiotherapy.

In the chapters on irradiation, the advances in physics during and since the war are embodied in the emphasis on supervoltage irradiation and the use of artificial radioisotopes. Each eminent authority has written a lucid and valuable chapter on his own field. The introductory chapters on irradiation covering the physical basis, the pathological response and the biological effects are an excellent summary of the present position. It is refreshing to see in print the statement that "three months after irradiation tumour cells may be found to look viable under the microscope, and yet the tumour subsequently disappears and the patient remains well for years." In the past, too often the histologist's comment that "the tumour has not been sterilized" has led to early and unnecessary surgical intervention.

In several of the chapters on radiotherapy, implantation of small radioactive sources such as radioactive gold seeds, cobalt beads, iridium or tantalum wire, is advocated for the treatment of metastatic lymph node disease. This would seem to confirm that there is a place for radiotherapy in the management of lymph node spread. This is in accord with certain current concepts.

The chapters on hormone therapy and chemotherapy are brief and to the point. In particular, Dr. Gelhorn's remarks on the unsuccessful attempts at chemotherapy in the terminal patient should be read by all who deal with malignant disease. In essence, the humane desire "to do something for a patient" is often best served by making that something nothing.

On the reporting of results of cancer therapy, the information in Chapters 36 and 37 is invaluable. It shows the many fallacies inherent in statistical analysis, and how easy it is to draw false conclusions from certain data. One cannot help but agree with Caskey (*Canad. M. A. J.*, 80: 251, 1959) that a national statistical group should be formed. The function of such a group would be to assess the statistics in papers relating to the results of treatment—and either issue or withhold a seal of authority—after the style of *Good Housekeeping*. Some degree of validity would thus be ensured.

In summary, this volume is another milestone in medical literature. "Pack and Ariel" will find its place on the shelves of most medical libraries.

**BREAST CANCER. The Second Biennial Louisiana Cancer Conference, New Orleans, January 22-23, 1958. Edited by Albert Segaloff. 257 pp. Illust. The C. V. Mosby Company, St. Louis, Mo., 1958. $5.00.**

This volume on breast cancer may not at first appear to come up to other more complete texts on the subject, but in fact it is much more satisfying and informative to the clinician. This book is a record of the Second Cancer Conference in Louisiana and includes presentations by authorities in their fields.

It is divided roughly into four parts. There are two sections on basic biology, one on definitive therapy, and one on hormonal therapy. Summation by the editor ends the book.

One of the attractions of this most interesting and authoritative book is a panel discussion at the end of each section which acts as a "breather" from the preceding heavier reading, and answers questions which naturally arise out of this reading.

This is a book which can be perused rewardingly in one evening, yet remain on one's shelf for later reference.

**GROUP PROCESSES. Transactions of the Third Conference, October 1956. Edited by B. Schnaffner. 328 pp. The Josiah Macy, Jr. Foundation, New York, 1957. $4.00.**

This book presents the proceedings of the third conference sponsored by the Josiah Macy, Jr. Foundation on "group processes". The bulk of the contents is a verbatim presentation of the discussions which took place between a group of people of varying disciplinary backgrounds on the subjects of interpersonal influences within the family; interpersonal persuasion; studies on maternal neonate interrelationships; and Chinese Communist thought reform.

The participants in the conference are not all known to this reviewer, but included such individuals as Dr. Jerome D. Franck, Dr. Frieda Fromm Reichman, Margaret Mead, Dr. John Spiegel and Dr. Joost Meerloo. These distinguished participants represented a variety of universities and disciplines in the field of the social sciences.

The essential value of the book is probably not in its content so much as in the demonstration of the kind of communication that can take place between small, balanced groups of varying interest, with the purpose of arriving at some common means of communication and the stimulating of new approaches to problems for the individuals concerned. For the average reader, the method of reporting will at least help to make these leaders in their respective fields come alive so that one has some understanding of the persons who are doing work which we read about in more formal documents. One of the most useful items is the brief biographical sketch of each of the participants which appears at the beginning of the book.

This book will have a limited range of readership in that it provides no particular fund of information of a scientific nature. It will be of interest to those concerned with the observing of group phenomena at whatever level, and of learning some thoughts of other people with regard to the operation of various groups in our society. It will also be of interest because it demonstrates a method that may be useful in the operation of various teaching conferences and workshops.

*(Continued on page 934)*

Canad. M. A. J.
June 1, 1959, vol. 80

*(Continued from page 932)*

**CURRENT THERAPY—1959. Edited by Howard F. Conn. 781 pp. W. B. Saunders Company, Philadelphia and London, 1959. $12.00.**

A decade has passed since the first of these annual volumes was offered to a very receptive medical public. Over the years changes have been made in the method of presentation so that, instead of several authors discussing a topic, only one treats a given subject, unless the therapeutic approach is very controversial. Flexibility is maintained by a change of author from year to year.

The inevitable delays inherent in publication have been minimized. No one could be accused of being out-of-date if he followed the excellent advice contained herein. A new feature is a list of normal laboratory values printed on the end papers. Its value would be enhanced by more references to the methods used in the determinations. A brief description of the drugs mentioned in the text is appended. The section on poisons has been expanded and contains a particularly useful list of poisonous ingredients in commercial products frequently used in the home.

This volume should be easily available to every practising physician.

**ELECTROLYTE CHANGES IN SURGERY. Kathleen E. Roberts, Parker Vanamee and J. William Poppell. 113 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1958. $5.00.**

Several books dealing with electrolyte changes in surgery have appeared recently, but this one adheres only to those problems occurring in the postoperative period and therefore is particularly attractive to the surgeon who is interested only in this practical aspect of the problem.

The authors assume that the reader has some basic knowledge of biochemistry, but this should not frighten away the surgeon who is shy of chemical knowledge. Indeed so clear and didactic is the presentation that a bare minimum of scientific information suffices.

The treatment suggested is of a practical nature so that this text can be used as a manual in the treatment of the various disturbances. The book carries the lesson that the diagnosis and treatment of an electrolyte abnormality is not an end in itself but forms the foundation upon which the diagnosis of the etiological disorder is built, and offers support to the sick patient while definitive treatment is undertaken.

**ATLAS OF TECHNICS IN SURGERY. John L. Madden, New York Medical College, New York. 648 pp. Illust. Appleton-Century-Crofts, Inc., New York, 1958.**

Surgery has now become so divided into subspecialties that it is rare indeed that one author undertakes the writing of a large volume to encompass almost all and more of the procedures undertaken by a general surgeon. Many surgical specialties are not touched on, but this atlas includes much, from the evacuation of a thrombosed hæmorrhoid and appendectomy to tendon graft and end-to-end splenorenal shunt. The author has written descriptions of standard operations to go with fine illustrations drawn by Alfred Feinberg. Criticisms of the procedures by 62 outstanding surgeons are added lest the reader get the impression that there is only one correct technique for any major operation.

This atlas is an excellent reference work for residents, occasional surgeons, fellows in surgery, interns, and the practising surgeon who is about to undertake an operation not often on his list. And it is well worth browsing through to see how one great New York surgeon performs one's favourite operation.

The illustrations are beautifully clear and precise, and suitable for all levels of surgical learning. The explanatory text, the opening articles on preoperative and postoperative care, fluid and electrolyte balance, and anæsthesia, and the comments by the distinguished critics are concise and well-written.

*Atlas of Technics in Surgery* is a valuable aid in the almost impossible task of teaching surgery.

**CLINICAL INVOLVEMENTS OR THE OLD FIRM. H. Gardiner-Hill, St. Thomas's Hospital, London, England. 200 pp. Illust. Butterworth and Co. Ltd., London and Toronto, 1958. $6.50.**

The ward round has long been recognized as a place where students may pick up grains of wisdom scattered freely by their teachers. Dr. Gardiner-Hill has been in the habit of dictating at the conclusion of the round running commentaries on cases seen in the company of his students. This book represents a compilation of many such commentaries, often with a thumbnail sketch of an interesting case followed by some diagnostic point, some story of a missed diagnosis or of an error made, or some troublesome problem of differential diagnosis. The cases have been loosely strung together in sections given general headings such as "The Development of Clinical Sense" and "Some Psychosomatic Involvement", but no attempt has been made to systematize the book or to give it an index. It is the sort of book that senior medical students might pick up at random and find one or two interesting points on any page. Practitioners will also learn a few things not to be found in the textbooks.

**DIE MUCOVISCIDOSIS ALS REZESSIVE UND IRREGULAER DOMINANTES ERBLEIDEN. (Mucoviscidosis as a Recessive and Irregularly Dominant Genetic Defect. A clinical and genetic study.) Th. Baumann. 102 pp. Illust. Benno Schwabe & Co., Basel, Switzerland; Intercontinental Medical Book Corporation, New York, 1958. $2.00.**

Between 1945 and the end of 1957, the author discovered 57 cases of mucoviscidosis in children of 42 families in the Swiss canton served by the pædiatric clinic at Aarau. His monograph is mainly based on clinical and genetic observations of these cases. The majority of the cases were of mixed forms, but there were ten mainly intestinal forms, four mainly pulmonary forms, and six cases of meconium ileus. The author notes that the patients did not die from their cystic fibrosis of the pancreas but, apart from meconium ileus, from sequels of the pulmonary disorder. Prognosis in each case seemed to depend more upon the child's constitution than on the treatment. Examination of duodenal secretion for pancreatic enzymes was the most reliable diagnostic aid.

The disorder usually appears as an ordinary recessive hereditary disease with full penetration, but occasionally all the typical manifestations appear in heterozygous persons. The author calculates that in Switzerland with a five-million population, 75 children die of this disease each year.

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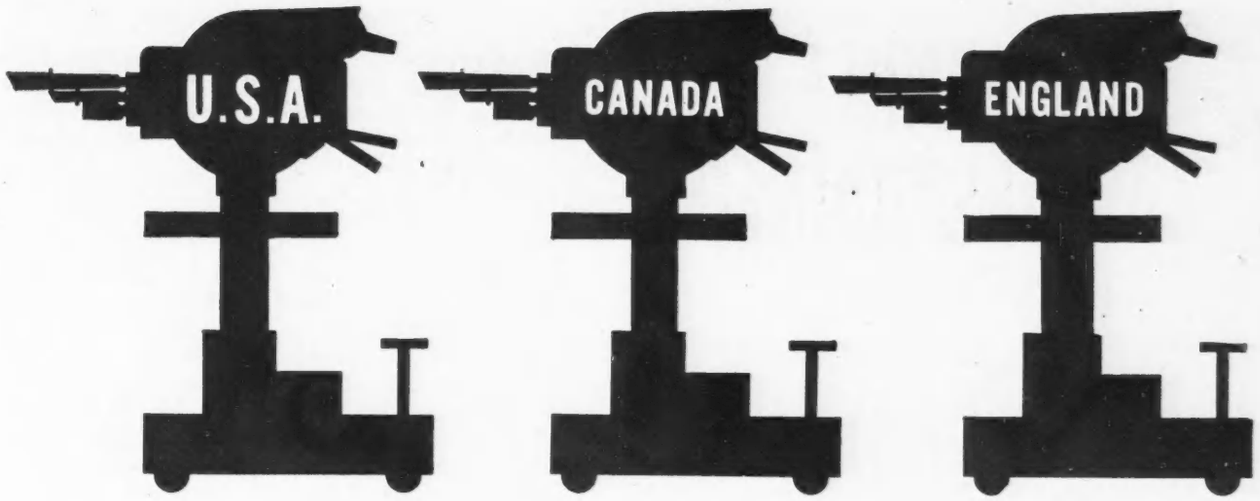


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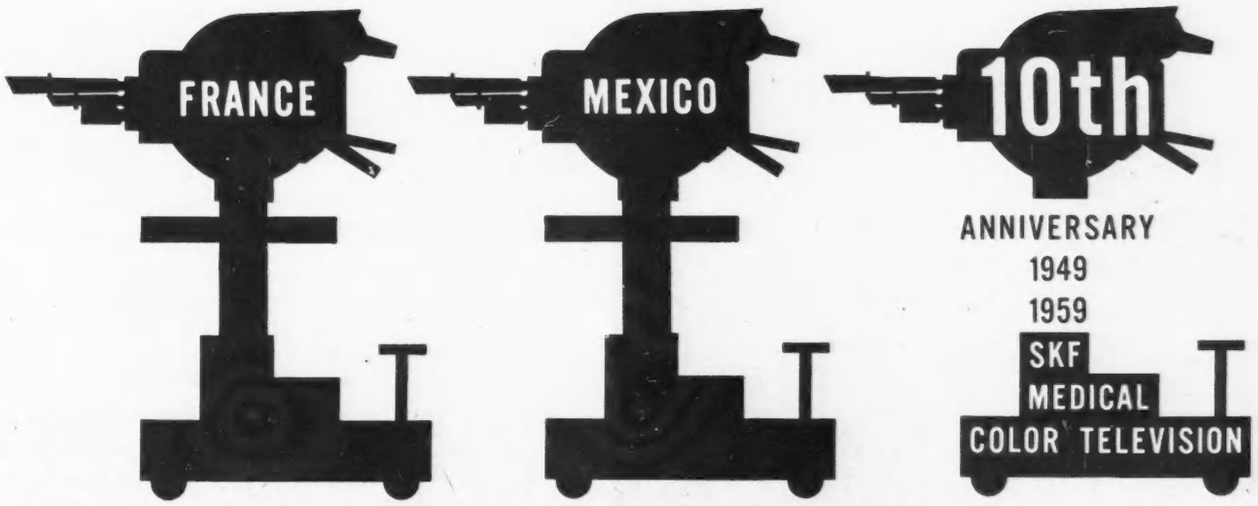


**SMITH KLINE & FRENCH • MONTREAL 9**

Canad. M. A. J.
June 1, 1959, vol. 80

*(Continued from page 934)*

**THE ANATOMY OF THE NERVOUS SYSTEM. Stephen Walter Ranson and Sam Lillard Clark. 622 pp. Illust. 10th ed. W. B. Saunders Company, Philadelphia and London, 1959. $9.50.**

The appearance of a sparkling new edition of this classic draws attention to two facts. The first is the obvious one that Ranson-Clark retains its leadership among neuro-anatomy textbooks. The second is that this beautiful book and all the others in its category are almost completely inappropriate for the brief courses in neuro-anatomy which are now in vogue. It seems ridiculous that, as neuro-anatomy courses get shorter, the better textbooks get longer — and the fault is not entirely with the writers. While Ranson-Clark has grown from 395 pages (in 1921) to its present 622 pages, many anatomy departments have been forced to reduce their total neurology instruction to about 60 hours.

Like *Gray's Anatomy,* this beautiful new edition, conceived as a textbook, is an authoritative reference book and the best of its kind.

**CLINICAL EXAMINATION OF THE NERVOUS SYSTEM. G. H. Monrad-Krohn, University of Oslo, Norway. 466 pp. Illust. 11th ed. H. K. Lewis & Co. Ltd., London. 1958. £2.**

Since its original publication in 1921, this book has run through 11 editions, multiple reprints and translations in several languages. These facts speak for themselves. Neurologists are well acquainted with this Bible of their specialty; practitioners of other branches of medicine may not know it so well. They should be informed that all the refinements of clinical neurological examination are to be found in it, plus descriptions of the auxiliary technical methods of examination such as the I.Q. determination and electrical and pharmacological tests. There is also a section on anatomical diagrams and one on interpretation of radiographs. Although a sound examination is a prerequisite in all phases of medical diagnosis, perhaps it is even more important in neurology than in any other specialty. This book is particularly well suited to supply all the information required in that field. The presentation of the subject matter reflects the vast experience of the author and has successfully passed the test of time in the 38 years during which it has been used by generations of clinicians.

The latest edition of this famous text may assume a particular significance in being the last one from the hand of the author. The Emeritus Professor has now retired from the chair of neurology in the University of Oslo and from the leadership of the University.

**THE EYE. A Clinical and Basic Science Book. E. Howard Bedrossian, University of Pennsylvania, Philadelphia. 340 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1958. $12.00.**

This might be considered a notebook of ophthalmology. The subjects covered include embryology and anatomy, physiology, pathology, optics and the clinical subjects related to ophthalmology. The book is handy in size and well organized; the material is clearly presented. As a notebook, or a place where one might quickly look up one or two points, it could be quite useful. For serious study on any one disease, the book would only serve as an introduction to the textbooks.

*(Continued on advertising page 41)*

**DIAGNOSTIC BACTERIOLOGY. A Textbook for the Isolation and Identification of Pathogenic Bacteria and Systemic Fungi. Isabelle G. Schaub and others. 338 pp. Illust. 5th ed. The C. V. Mosby Company, St. Louis, 1958. $4.75.**

This is the fifth edition of an excellent "little" book on bacteriological methods, designed for the senior technician of a routine hospital bacteriology laboratory. It follows that the scope of and demand for this book are limited.

Although still carrying the names of the original authors, Isabelle G. Schaub and M. Kathleen Foley, this edition has been prepared and considerably revised by Elvyn G. Scott and W. Robert Bailey. New material consists of methods of determining antibiotic sensitivities, antistreptolysin O titre, C-reactive protein, the handling of specimens for the laboratory diagnosis of virus diseases and methods for the isolation and identification of pathogenic fungi. This text is purely one of methods, and to keep it simple only a single method for a procedure is described, with the reference where indicated. Although detail is sacrificed to simplicity, the methods are comprehensive enough to give reliable results in trained hands.

This book can be recommended as a valuable asset to any hospital bacteriology laboratory, especially in those cases where the bacteriology department is a subsection of pathology under the direction of a senior technician.

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# FORTHCOMING MEETINGS

## CANADA

NUTRITION SOCIETY OF CANADA, Annual Meeting, School of Hygiene, University of Toronto. (Dr. G. H. Beaton, Department of Nutrition, School of Hygiene, University of Toronto, Toronto 5, Ont.) June 12, 1959.

SOCIETY OF OBSTETRICIANS AND GYNÆCOLOGISTS OF CANADA, Annual Meeting, Mont Tremblant Lodge, Mont-Tremblant, Que. (Dr. F. P. McInnis, Secretary, 280 Bloor St. West, Toronto 5, Ont.) September 10-13, 1959.

CANADIAN OPHTHALMOLOGICAL SOCIETY (SOCIÉTÉ CANADIENNE D'OPHTALMOLOGIE), Annual Meeting, Sheraton-Brock Hotel, Niagara Falls, Ont. (Dr. R. G. C. Kelly, Secretary, 90 St. Clair Avenue West, Toronto 7, Ont.) October 6-8, 1959.

CANADIAN OTOLARYNGOLOGICAL SOCIETY (SOCIÉTÉ CANADIENNE D'OTOLARYNGOLOGIE), Annual Meeting, Sheraton-Brock Hotel, Niagara Falls, Ont. (Dr. Donald M. MacRae, Secretary, 324 Spring Garden Road, Halifax, N.S.) October 9 and 10, 1959.

THE CANADIAN SOCIETY FOR THE STUDY OF FERTILITY, Annual Meeting, Queen Elizabeth Hotel, Montreal, Quebec. (Dr. Jean F. Campbell, Secretary-Treasurer, 238 Queen's Ave., London, Ont.) October 23 and 24, 1959.

## OTHER COUNTRIES

INTERNATIONAL CONGRESS OF PLASTIC SURGERY, London, England. (Mr. David Matthews, Secretary General, 152 Harley Street, London W.1, England.) July 13-17, 1959.

CANADIAN MEDICAL ASSOCIATION, Ninety-Second Annual Meeting, in conjunction with the Annual Meeting of the British Medical Association, Edinburgh, Scotland. (Dr. A. D. Kelly, General Secretary, Canadian Medical Association, 150 St. George Street, Toronto 5, Ont.) July 18-24, 1959.

# *Books Received*

**Books are acknowledged as received, but in some cases reviews will also be made in later issues.**

**Psychopharmacology Frontiers.** Edited by Nathan S. Kline. 533 pp. Illust. Little, Brown and Company, Boston; J. B. Lippincott, Montreal, 1959. $10.00.

**Fundamentals of General Anesthesia for Students and Practitioners of Dentistry.** John Adriani, Charity Hospital, New Orleans, La. 213 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1959. $7.25.

**Antisocial or Criminal Acts and Hypnosis: A Case Study.** Paul J. Reiter, University of Copenhagen. 219 pp. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1958. $13.50.

**Textbook of Surgery.** Edited by Guy Blackburn and Rex Lawrie. 1122 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1958. $20.00.

**The Demonstration Clinic.** For Psychological Study and Treatment of Mother and Child in Medical Practice. David M. Levy. 120 pp. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1959. $5.50.

**Medulloblastoma.** Benjamin L. Crue, U.S. Naval Hospital, San Diego, Calif. 204 pp. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1958. $6.25.

**The Pneumoconiosis Problem.** Eugene P. Pendergrass, University of Pennsylvania School of Medicine, Philadelphia, Pa. 146 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1958. $7.50.

**Pathogenesis and Treatment of Parkinsonism.** Edited by William S. Fields, Baylor University College of Medicine. 372 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1958. $11.75.

**A Compendium of Research and Theory of Stuttering.** Charles F. Diehl, University of Kentucky. 314 pp. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1958. $10.75.

**Occupational Allergy.** European Academy of Allergy. 329 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1958. $12.00.

**Neurological and Psychological Deficits of Asphyxia Neonatorum.** Edited by William F. Windle. 336 pp. Illust., Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1958. $8.75.

**The Roots of Psychoanalysis and Psychotherapy: A Search for Principles of General Psychotherapeutics.** S. A. Szurek, University of California School of Medicine, San Francisco. 134 pp. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1958. $4.75.

**The Myth of the Birth of the Hero and Other Writings.** Otto Rank, edited by Philip Freund. 315 pp. McClelland & Stewart Limited, Toronto, 1959. $1.40.

**Current Therapy.** Edited by Howard F. Conn. 781 pp. W. B. Saunders, Philadelphia and London, 1959. $12.00.

**A Clinical Introduction to Heart Disease.** Creighton Bramwell, University of Manchester. 299 pp. Illust. Oxford University Press, Toronto, 1959. $3.25.

**The Plasma Proteins.** Paul G. Weil, McGill University. 133 pp. J. B. Lippincott Company, Philadelphia and Montreal, 1959. $3.50.

**Star Wormwood.** Curtis Bok. 228 pp. McClelland & Stewart Limited, Toronto, 1959. $4.50.

**Radiographic Atlas of Skeletal Development of the Hand and Wrist.** William Walter Greulich and S. Idell Pyle, Stanford University School of Medicine. 256 pp. Illust. 2nd ed. Stanford University Press, Stanford, Calif., 1959. $15.00.

THE CANADIAN MEDICAL ASSOCIATION

# JOURNAL

# LE JOURNAL DE L'ASSOCIATION MÉDICALE CANADIENNE

**Editorial Office—150 St. George St., Toronto 5**

**General Secretary's Office—150 St. George St., Toronto 5**

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*Manuscripts:* Manuscripts of original articles, case reports, short communications, and special articles should be submitted to the Editor at the C.M.A.J. editorial office, 150 St. George St., Toronto, with a covering letter requesting consideration for publication in the *Journal*. Acceptance is subject to the understanding that they are submitted solely to this *Journal*, and will not be reprinted without the consent of both the Editor and the author. Articles should be typed on one side only of unruled paper, double-spaced and with wide margins. Carbon copies cannot be accepted. The author should always retain a carbon copy of material submitted. Every article should contain a summary of the contents.

The Editor reserves the right to make the usual editorial changes in manuscripts; these include such changes as are necessary to ensure correctness of grammar and spelling, clarification of obscurities or conformity to *Journal* style. In no case will major changes be made without prior consultation with the author. Authors will receive galley proofs of articles before publication, and are asked to confine alterations of such proofs to a minimum.

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*References:* Authors should limit references to published work to the minimum necessary for guidance to readers wishing to study the subject further. They should not quote articles they have never seen. Except in review articles, the maximum number of references should not be more than 25. References should be numbered in the text and should be set out in a numbered list at the end of the article, thus:

1. DOAKES, J.: *M. J. Kamchatka*, 1: 2, 1955, giving in order: (1) Author's name and initials in capitals. Where more than three authors are concerned in an article, only the first should be named, with *et al.* as reference to the others. (2) Quarterly Cumulative Index Medicus abbreviation of journal name. (3) Volume number. (4) Page number. (5) Year.

References to books should be set out as follows:

PICKWICK, S., *Textbook of Medicine*, Jones and Jones, London, 1st ed., p. 30, 1955.

*Illustrations:* Photographs should be glossy prints, unmounted and untrimmed, preferably not larger than 10 by 8 inches. Colour work can be published only at the author's expense. Magnification of photomicrographs must always be given. Photographs must not be written on or typed on. Identification can be made by pasting an identifying legend on the back. Patients must not be recognizable in illustrations, unless the written consent of the subject to publication has been obtained. Graphs and diagrams should be drawn in india ink on suitable white paper. Legends to all illustrations should be typed separately from the text of the article. Illustrations should not be rolled or folded.

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## Miscellaneous

**PRINTING.**—Specialists to medical profession. 1000 statements—$9.50; 2000 statements $15.50, envelopes, prescription pads, appointment cards, receipts, etc. All carrying charges prepaid. Samples submitted. Waverley Press, 1860 Queen Street East (at Woodbine), Toronto 8, Ontario.

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**FOR RENT.**—Medical suite; Bloor at Bathurst on second floor; modern, air-conditioned with private washroom. 400 square feet approximately, reasonable rent. Telephone Dr. Sand at LEnnox 3-2844.

**DOCTORS' OFFICES,** centrally located in Toronto, on corner St. George and Dupont Streets. New, modern building, air-conditioned, heated and cleaning services, sub-divided to suit. Four dollars per square foot. Possession July of 1959. Telephone HIckory 7-0461 or RUssell 3-6206.

**FOR SALE** in Montreal. Property on Sherbrooke Street West, $37,000. 11 rooms. Exclusive district. Used to be consulate now private residence. Also 9-room house on Park Avenue. Perfect condition. Some medical equipment included. $32,000. Retired doctors residence and offices. Ready to start office. Cash $10,000 to $13,000 each. Chartered Trust Company, 388 St. James Street West, Montreal, AVenue 8-5201.

**FOR RENT.**—Applications now being received for office space in Chatham's new proposed Medical Art Building. Air-conditioned. Plenty of parking. New building. For further information call or contact W. F. Johnson Limited, Realtors, 35 East Market Square, Chatham, Ontario. Call ELgin 2-4343.

## Positions Wanted

**TWO MALE CANADIAN GRADUATES,** both married, each 29 years old, with small families; desire practice in small town with facilities for surgery, etc., by July 1, 1959. At present doing postgraduate work. Details in first letter. Prairie provinces preferred. Replies treated confidentially. Reply to Box 272, Canadian Medical Association Journal, 150 St. George Street, Toronto 5, Ontario.

**GENERAL SURGEON,** age 32 years, married, Canadian citizen, Canadian graduate, fellowship eligible, completing general surgical residency, U.S.A.; desires association with surgeon or industrial post. Available July, 1959. Reply to Box 252, Canadian Medical Association Journal, 150 St. George Street, Toronto 5, Ontario.

**LOCUM TENENS** or limited assistantship desired by recent Canadian graduate for three months from mid-August until November, 1959. Own car. Anywhere in Canada, preferably Ontario. Reply to Box 274, Canadian Medical Association Journal, 150 St. George Street, Toronto 5, Ontario.

# MEDICAL NEWS *in brief*

*(Continued from page 905)*

## ETIOLOGICAL ASPECTS OF MULTIPLE SCLEROSIS

After reviewing the history of etiological theories in multiple sclerosis, Miller and Schapira (*Brit. M. J.*, 1: 737 and 811, 1959) point to the unsuccessful search for a specific infective agent which has been going on for the past 50 years. There is no positive evidence in favour of a viral etiology, nor is such a possibility ruled out by present-day knowledge. The authors are chiefly concerned in elucidating the relationship between multiple sclerosis and the acute encephalomyelitic syndromes which occur after measles, chickenpox, influenza and vaccination. Although admittedly rare, a number of non-specific factors such as trauma, fatigue and emotional disturbance can occasionally provoke the onset or an exacerbation of multiple sclerosis. A reflex circulatory disturbance seems to be the most likely explanation for such cases.

In the course of a regional survey the authors have personally examined more than 600 patients with multiple sclerosis and give some illustrative cases showing relationship with trauma and with non-specific infection. Although the textbook description of multiple sclerosis differs greatly from that of acute encephalomyelitis, recent clinical and pathological evidence shows that many features are common to both conditions. These similarities are stressed in support of a unitary hypothesis of demyelinating disease with a spectrum ranging from the most acute obviously post-infective or post-vaccinal encephalitis on one side to the insidious progressive spinal form of multiple sclerosis on the other. The authors would include in such a spectrum other conditions in which demyelination is present, such as acute hæmorrhagic leuko-encephalitis and Schilder's disease. The common origin for this whole group would be some kind of hypersensitivity disturbance, and the relationship between the acute forms such as encephalomyelitis and multiple sclerosis could be likened to that between acute miliary tuberculosis and chronic remittent pulmonary phthisis. With such a working hypothesis, various avenues of research from the pathological and immunological point of view are indicated and therapy with agents inhibiting antigen-antibody reaction or suppressing inflammatory reaction is suggested.

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## WORLD POSTGRADUATE TOUR FOR SURGEONS

The International College of Surgeons will hold its fourth around-the-world postgraduate refresher clinic tour in the late fall. Dr. Edward L. Compere of Chicago, president of the United States Section, I.C.S., will be the co-ordinator of medical activities. Departure will be by plane from San Francisco, October 10. The tour participants will take in specially arranged meetings of I.C.S. Sections in Tokyo, October 18-19; Hong Kong, October 29-30; Bangkok, November 2; Tel Aviv, November 20; Istanbul, November 24, and Athens, November 27. Sightseeing trips have been

*(Continued on page 48)*

MEDICAL NEWS *in brief*

*(Continued from page 47)*

arranged for these and other countries, including Thailand, India, Ceylon, Egypt, Lebanon, and Jordan. Arrival in New York will be about December 1. Accommodations are limited.

For further information, write to the Secretariat, International College of Surgeons, 1516 Lake Shore Drive, Chicago 10, or to the International Travel Service, Inc., 119 South State Street, Chicago 3.

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## PASSANO FOUNDATION AWARD

Dr. Stanhope Bayne-Jones has been selected as the recipient of the $5000 Passano Award for 1959. On Wednesday evening, June 10, during the convention of the American Medical Association in Atlantic City, a reception and dinner will be held at the Traymore Hotel to honour Dr. Bayne-Jones. This year's award is presented in recognition of a long and extraordinary service to science and medicine as educator and administrator in tasks of the highest importance, in all of which he has served with distinction and faithfulness. His most recent post was that of Chairman of the Secretary's Consultants on Medical Research and Education, Department of Health, Education and Welfare.

The Passano Foundation, sustained by the Williams & Wilkins Company, was formed late in 1943 for the encouragement of medical science and research, particularly that having a clinical application.

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## WORKING ABROAD

Unlike their British cousins, Americans had no widespread tradition of working abroad until very recent years. Indeed, up to World War II, only a handful of American citizens were employed in foreign service. However this number has been greatly expanded of recent years, and the expansion has created certain problems. These problems and their solution are discussed in a monograph entitled "Working Abroad; A Discussion of Psychological Attitudes and Adaptation in New Situations", formulated by The Committee on International Relations of the Group for the Advancement of Psychiatry (Publications Office, 104 East 25th St., New York 10, N.Y.). This monograph first assesses the significance of the problem of "separation anxiety" which causes emotional problems and interference with work in a minority of persons working abroad. It discusses the nature of the satisfactions and stresses in these circumstances, and the problems of personal relationships which arise, together with the factors in adaptation to overseas service. In considering the selection, orientation and training of employees for work abroad, attention is drawn to the fact that failure commonly arises from inability to manage anxieties rather than from deficiencies in technical skill. It is therefore recommended that employers should pay more attention to the mental health of the prospective employee, even though it may mean lowering technical requirements for the jobs.

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Among personal qualifications for success overseas are a deep interest in the work done, flexibility and adaptability to the unknown and "social imagination" or the capacity to see the situation as others may see it.

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## RESEARCH AT McGILL

In a short article in *Nature* (183: 716, March 14, 1959) Professor Quastel describes the activities of the McGill-Montreal General Hospital Research Institute, which has recently celebrated its 10th Anniversary. This institute, which is situated on University Street, arose as a result of a decision made in 1947 to establish a laboratory for solution of medical problems by fundamental biochemical methods. When the institute was inaugurated in 1948, it was the first of its kind to be established in a Canadian hospital. The initial staff of five has grown to 35, of whom 16 are students working for a Ph.D. Twelve different nationalities are represented. More than 150 original scientific articles have been published from this institute, all in the biochemical field and mostly concerned with investigations undertaken because of their relation to medical problems. Some work is in cancer, some in problems of the central nervous system, some in virology and microbial chemistry and some in the field of intestinal absorption.

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## AMERICAN PUBLIC HEALTH ASSOCIATION'S 87TH ANNUAL MEETING

The sessions of the American Public Health Association's 87th Annual Meeting, to be held in Atlantic City, N.J., October 19-23, 1959, will emphasize both practical community applications of recent scientific developments and a review of the scientific bases for public health work. Scientific sessions are being planned by the Association's 14 sections, and there will be scientific and industrial exhibits. Among related organizations meeting during the week are the American Association of Public Health Physicians, American College of Preventive Medicine, American Industrial Hygiene Association, American National Council for Health Education of the Public, Association of Business Management in Public Health, Association of Schools of Public Health, Industrial Medical Association, Joint Commission on Mental Illness and Health, and the Public Health Cancer Association of America. A highlight of the meeting will be the presentation of the annual Albert Lasker Awards of the A.P.H.A. and the Sedgwick Memorial Medal.

During the past year the Association expanded and reorganized its program. It now has regional offices in San Francisco, Calif., and Washington, D.C. Projects in progress include the development of guides and manuals for community health study; for services to children with orthopædic handicaps, emotional disturbances and heart conditions; control measures for mental disorders; radiological health practice; control of nutritional diseases; and chronic disease

*(Continued on page 50)*

MEDICAL NEWS *in brief*

*(continued from page 49)*

programs for state and local health departments.

Local arrangements for the meeting are being made by a committee headed by Dr. Samuel L. Salasin, Health Officer of Atlantic City, and Dr. Daniel Bergsma, New Jersey State Commissioner of Health. The President of the Association is Dr. Leona Baumgartner, Commissioner of the Health Department of New York City.

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## WORLD MEDICAL ASSOCIATION

At its meeting in Sydney, the Council of The World Medical Association appointed Dr. John M. Bishop of Bellevue, Washington, U.S.A., as Deputy Secretary-General of the Association. Dr. Bishop is a graduate of the University of Illinois, and has several years' service in the United States Public Health Service, from which he resigned in 1957 to take up private practice.

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## THE CHANGING STATUS OF POLIOMYELITIS

The March 1959 issue of *Progress in Health Services* (Health Information Foundation, New York) sounds a warning note about the current status of poliomyelitis prevention. While the course of polio in the United States was sharply downward between 1955 and 1957, there was an upswing in numbers of paralytic cases in 1958, and several epidemics occurred, mainly among unvaccinated or incompletely vaccinated populations. Whereas the number of cases had risen from 10,000 in 1940 to nearly 58,000 in 1952, this figure had dropped to 5485 in 1957. Unfortunately in 1958 it seems to have increased to over 6000 cases. What is worse, the total of paralytic cases rose from 2500 in 1957 to over 3100 in 1958, a rise generally believed to be due to heightened activity by the polio virus.

Salk vaccine has not changed the characteristic pattern of increased morbidity and mortality from polio in males. It has however changed the mortality pattern, for the fall in death rate is sharpest in the years 5 to 9, while the highest mortality is under 1 year of age, with adults aged 20 to 34 next. Poliomyelitis tends to occur earlier in life in crowded areas; in the 1958 Detroit epidemic, paralytic cases were concentrated among pre-school children in the non-white population in areas of poorest conditions and greatest crowding. Such areas have an exceptionally low level of inoculation.

Finally, it is noted that in the United States only 57 million or one-half of the population in the age group to be covered have received the full series of three or more injections. The need in that country is now sharpest at the pre-school age, and from 20 to 39 years, where only 45 and 30% respectively have been fully vaccinated.



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## THREATENED ABORTION

Because of the theory that small vessels appear to play a major part in the pathogenesis of abortion, and because it has been suggested that certain bioflavonoid compounds together with vitamin C may restore normal capillary structural integrity and thereby reduce or arrest certain types of bleeding, Ainslie (*Obst. & Gynec.*, 13: 185, 1959) compared a series of threatened abortions treated by a standard therapeutic regimen consisting of 4 to 6 capsules of a mixture of bioflavonoids and vitamin C (duo-CVP) daily from the onset of bleeding with a control series. This author feels that the administration of this preparation contributed to reduction in the abortion rate in such cases from 9.9% in a series of 304 control cases to 6.4% in a series of 543 treated cases. The rate for fetal loss in patients who actually bled was reduced from 46.9% to 26.7%. A fairly constant percentage (7.8 and 7.1%) of patients in each series aborted so soon that little could be done for them.

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## FOREIGN SECTION MEETINGS, INTERNATIONAL COLLEGE OF SURGEONS

The International College of Surgeons announces the scheduling of nine section meetings in Europe, Asia, and South America. The places and dates are as follows: French Section, Lyons, June 19-21; The Netherlands Section, Amsterdam, July 25-26; Finnish Section, Helsinki, August 8-9; Austrian Section, Vienna, August 19-20; Brazilian Section, Santos, in September; China-Hong Kong Section, Hong Kong, October 30; Thailand Section, Bangkok, November 2; China-Formosa Section, Taipei, Taiwan, in December; India Section, Jaipur, Rajasthan, in December.

For information, write to the Secretariat, International College of Surgeons, 1516 Lake Shore Drive, Chicago 10.

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## THORACOTOMY IN DIFFERENTIAL DIAGNOSIS OF PLEURAL EFFUSION

In cases of idiopathic pleural effusion the best way to differentiate tuberculous from non-tuberculous disease is by means of an open exploratory thoracotomy, with removal of an adequate area for biopsy from the involved pleura, according to Schless *et al.* (*Ann. Int. Med.*, 50: 11, 1959). A specimen of lung should be obtained when pulmonary involvement is found. Anatomical change is unaffected by preoperative chemotherapy, but the chances of bac-

teriological confirmation are inversely proportional to the duration of preoperative chemotherapy.

The findings in 63 cases would indicate at least 92% reliability of full exploratory thoracotomy in establishing a differential diagnosis of tuberculous versus non-tuberculous pleural effusions on morphological criteria. Except for a short period of preoperative drug coverage in all cases, antimicrobial therapy should be withheld from all patients without morphological or bacteriological changes compatible with tuberculosis. A long-term follow-up study on such a series of cases would seem to be of great value.

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## EFFECT OF FUNNEL CHEST ON CARDIAC FUNCTION

In recent years there has been a controversy as to the effect of funnel chest, with its considerable sternal depression and obvious interference with the topography of the heart, on cardiac function. Some deny that there is any effect, while others have felt that diminished exercise tolerance is common in these cases.

Russell Howard of Melbourne, Australia (*Arch. Dis. Childhood,* 34: 5, 1959), has had the opportunity of assessing over 400 patients with funnel chest, and has personally operated on 90 in whom there was striking clinical evidence of a physical handicap before operation. This surgeon is convinced that the heart is frequently compressed by the sternum in funnel chest, that marked deformity and diminution of the capacity of the right ventricle may thereby be produced, that failure of output to increase with exercise has been demonstrated by him, and that both cardiac deformity and exercise intolerance can be relieved by operation.

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## THE GENESIS OF NEW DRUGS

The advertising department of Frank W. Horner Limited has recently published a brochure entitled: "The Restless Quest" which describes the various steps in the production of a new drug. The example used is 6-aminonicotinamide (6-AN), which was produced originally as an inhibitor of sulfonamide acetylation but turned out to be too toxic for use, as it interferes with nicotinamide metabolism. This particular property was exploited in creating a 6-AN analogue of diphosphopyridine nucleotide. The new product possesses promising antimetabolite properties and may eventually be used in cancer therapy.

A short description is given of the contribution of all the departments involved in the production of such a drug. The brochure is profusely illustrated, soberly written and elegantly presented. It ranks among the better forms of pharmaceutical advertising aimed at physicians.

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## SIMPLIFIED SCREENING TEST FOR CYSTIC FIBROSIS OF PANCREAS

It has been known since 1948 that children with cystic fibrosis of the pancreas have elevated chloride concentration in the sweat and that this can be demonstrated

*(Continued on page 52)*

MEDICAL NEWS *in brief*

*(Continued from page 51)*

by using silver preparations on hand sweat. The earlier methods were bulky and did not provide any permanent record of the reaction. A recent simplification of this test is described by Knights, Brush and Schroder of Flint, Michigan (*J. A. M. A.*, 169: 1279, 1959). No. 1 Whatman filter paper 11 cm. in diameter is dipped in 0.2 N silver nitrate solution, then blotted gently and allowed to dry completely. It is then immersed in 0.2 N potassium chromate solution, washed in distilled water to remove excess potassium chromate, and again blotted. In testing, the patient's hand is pressed down on the moist filter paper and held there for three or four seconds. The results are graded 1+, 2+ or 3+, the latter being strongly suggestive of cystic fibrosis. When compared with normals, these patients give relatively heavier prints of fingers and palms. After drying, these papers remain stable and provide a lasting record of the reaction.



## BACTERÆMIA DURING PARTURITION

Specimens of blood were obtained in 101 consecutive patients after delivery of the placenta by Redleaf and Fadell (*J. A. M. A.*, 169:1284, 1959). These specimens as well as follow-up specimens on the first post-partum day were placed in culture media and examined at the end of one week, and at the end of three weeks smears were made and transfers to blood agar plates done. Of the total of 202 samples, growth was obtained in 15 – 4 in the samples at the end of labour and 11 in those of the first post-partum day. Fourteen cultures yielded a staphylococcus but only one was coagulase-positive. Despite this low incidence of bacteræmia after parturition, the authors recommend the use of prophylactic antibiotic therapy in patients with predisposing heart disease. The tetracycline drugs sterilize the uterus more effectively than penicillin, but the bactericidal action of penicillin has its advantages. Therapy should be initiated at the onset of labour and continued through the third post-partum day.

## TETRACYCLINE PHOSPHATE COMPLEX IN PÆDIATRICS

Attempts have been made to increase the oral effectiveness of the tetracycline antibiotics by attaching a radical which would help accentuate absorption and maintain prolonged blood levels. One of these compounds, tetracycline phosphate complex (Sumycin), has recently been reported on by Valente and Nemir of New York (*Antibiotic Med. & Clin. Therap.*, 6: 159, 1959). They used it to treat 47 infants and children with acute infections, including pneumonia, acute tonsillitis, acute otitis media, impetigo, bronchitis and acute upper respiratory infections. All patients were infants or small children and the average dose was 28 mg. per kg. body weight per day, given six-hourly either in tablet form or as a syrup by mouth. Treatment varied from two to 12 days, and no toxic signs were noted. All patients recovered without complications, and the majority (85%) showed a prompt response within 48 hours of begin-

*(Continued on page 54)*

MEDICAL NEWS *in brief*

*(Continued from page 52)*

ning therapy. Treatment of 11 out of 15 patients with pneumonia was successful within 24 to 48 hours. Response in acute purulent otitis media and cervical adenitis was impressive. The preparation should prove useful for treatment of outpatients or in office practice.

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## AN OCCUPATIONAL HEALTH DIRECTORY

The International Labour Office has just issued a two-volume *International Directory of Institutions Engaged in Study, Research and Other Activities in the Field of Occupational Safety and Health.* The directory was compiled as a result of replies to questionnaires circulated throughout the world, and contains only the names of institutions of national significance. The institutions in each country are listed separately, the countries being arranged in alphabetical order. For each institution there is a note on its status (non-profit body, governmental body, etc.), its departments or special sections, its principal functions, its scope of scientific research, and its publications. The names of the directors and the address of the institution are given. It will be possible to obtain loose-leaf additions to keep the index up to date. The two biggest contributors to the list are the United Kingdom and the United States of America with 42 institutions listed in each case. These range from the British Ceramic Research Association to the Tavistock Institute of Human Relations and the National Fire Protection Association of the U.S.A.

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## SEVERE INFECTIOUS MONONUCLEOSIS TREATED WITH PREDNISOLONE

A 16-year-old boy had severe anginose infectious mononucleosis, unequivocally confirmed by hæmatological and serological investigations, and causing almost complete nasal and pharyngeal obstruction. In addition, the patient showed signs of hepatic disease and generalized toxæmia, including manifestations in the central nervous system. The prognosis appeared highly unfavourable despite supportive therapeutic measures. Prednisolone was administered intravenously with dramatic effect manifested within 12 hours. The temperature fell to normal. The mental condition cleared, and the upper respiratory obstruction improved. Continuation of the medication, now orally, resulted in complete rehabilitation of the patient within four days. Use of prednisolone was based on the known lympholytic action of adrenal steroids. Other cases of infectious mononucleosis with similar treatment and results are now being reported in the literature.—M. C. Creditor and H. W. McCurdy: *Ann. Int. Med.*, 50: 218, 1959.

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## PREOPERATIVE AND POSTOPERATIVE CARE IN OPEN CARDIAC SURGERY

After experience with over 700 patients Barnard *et al.* (*Dis. Chest*, 35: 194, 1959) discuss the important aspects in preoperative and postoperative care of patients

undergoing open heart surgery. The careful preparation of the operative field and the preoperative use of antibiotics and a good diet supplemented by vitamins will assist in obtaining a smooth convalescence free of infections and complications. Patients with a high pulmonary flow or pulmonary congestion are prone to infections of the tracheobronchial tree and lungs and should be adequately treated before operation. Overt or incipient heart failure should be treated with salt restriction, diuretics and digitalization, but routine preoperative digitalization is not recommended. They recommend that tracheostomy be performed preoperatively in patients with high pulmonary artery pressures and resistances, to enable one to deal more adequately with secretions postoperatively and to assist respiration in this period if necessary.

In the immediate postoperative phase, careful measurement and replacement of blood loss from the chest catheters and care of the tracheobronchial tree are some of the most important factors leading to a low mortality. Clearing of secretions from the mouth, nasopharynx and hypopharynx by careful suctioning is recommended. Oxygen administration and humidification, often supplemented with bronchial detergents, are used routinely. Unless there are unusual losses, electrolyte imbalance is not frequently a problem in the postoperative phase. Intravenous fluids should be limited to 1.5 to 2 c.c./kg./hour for the first 24 hours to minimize the risk of pulmonary œdema. Enough sodium chloride is given to cover losses due to gastric suction and sweating. Prevention of acidosis in the postoperative period is of greatest importance. An adequate circulation is the most important single factor in the prevention of this grave complication, but control of restlessness and high temperatures and the use of sodium bicarbonate will be of some help. Heart failure should be treated in the usual manner. Temporary cardiac failure 10-14 days after operation and due to the traumatic myocarditis is seen occasionally, especially in patients with low operative cardiac reserve. This can be detected early by following the daily weight, responds well to digitalization and salt restriction, and in no way jeopardizes an ultimately good prognosis if properly managed. Heart block is managed with a myocardial (internal) electrode and artificial pacemaker constructed to give the small voltages necessary (1-10 volts). Isuprel is occasionally utilized to supplement the pacemaker and facilitate reconversion to a sinus rhythm.

Antibiotics are used for 10-12 days postoperatively and patients are discharged 14-21 days after operation.



## THE SINGLE SEIZURE

Many persons have had a single epileptic seizure and never had a second one. The problem arises in investigating and treating such a case whether a further seizure is likely. For example, only 5% of all children under 5 years of age who had a febrile convulsion went on to chronic seizures later. Thomas of Salt Lake City (*J. A. M. A.*, 169: 457, 1959) has analyzed

*(Continued on page 56)*

MEDICAL NEWS *in brief*

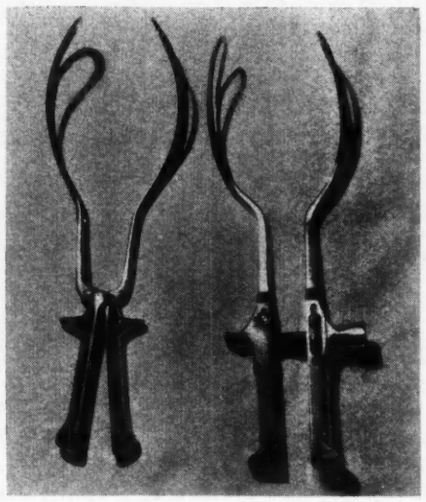
*(Continued from page 55)*

48 single or first seizures in patients ranging in age from 2 to 66 years, in an effort to identify factors of prognostic value. He notes the value of an accurate and detailed history of the attack. This should be followed by a review of the general medical history, a physical and neurological examination, routine blood and urine studies and x-ray and EEG studies. If specifically indicated, the CSF should also be examined, or air studies or angiography carried out.

The single seizure should not be taken lightly, for no fewer than 13 out of the 48 in this series had subsequent attacks. In view of this high incidence, Thomas suggests that after a single major seizure anticonvulsive medication should be undertaken. If under such medication the patient remains free from further seizures for two years, the administration may be gradually terminated.

## THE PARALLEL FORCEPS

The one essential element to any perfect obstetric forceps is that it should fit all fetal heads accurately, from the smallest to the largest; hence the blades should approach and separate in exact parallelism. W. B. Shute of Ottawa (*Proc. Roy. Soc. Med.*, 51: 837, 1958) describes the development of such a forceps in 1941, the subsequent remedying of several defects in the first instrument, and the perfection of an efficient single locking device suitable for a parallel forceps. The lock consists of two moving parts imprisoned in the shank and horn of the left forceps shaft. (1) A double threaded screw works within a longitudinal bore at right-angles to the axis of the forceps shaft which, when maximally retracted, is recessed within the traction horn of the handle. To



prevent uncontrolled rotation, the screw is keyed from below and so can move smoothly laterally without turning. Fused to its free end, i.e. that projecting towards the opposing shank, is a rectangular piece of steel forming a T-shape with the axis of the screw. (2) A large nut or wheel is imprisoned in an axial slot in the left shank. This is deeply notched to allow easy, powerful rotation by the fingers. It is threaded and engaged with the screw, so that it controls all movement of the latter towards or away from the opposing shank.

The blades are guided into place in cephalic application in the usual manner except that each can be inserted almost directly with much less wandering. Either blade may be inserted first. After application, the heels of both handles are automatically forced together. The notched wheel in the left shank is now turned anti-clockwise until the rectangular T-piece of the screw enters a receptor slot on the

right shank. By continued rotation of the wheel the T-piece is forced along an inclined entrance, thus separating the handles gradually until, when it sinks into the final vertical recess in the right shank, the forceps are exactly parallel. Then a pin is drawn down to catch the upper arm of the T-piece and fix it, thus locking the blades rigidly in parallelism. The blades are then tightened by reversing the wheel and turning in a clockwise direction through three notches, thus approximating the blades by 2 mm. For very difficult extractions, the wheel may be turned four or five notches. If these rules are kept, all but the slightest pressure marks upon the face are avoided.

The advantages of the forceps are: (1) maintenance of accurate parallelism of blades in all circumstances, (2) exact fit to head of blades, (3) ease of application, (4) ease of rotation of the head, (5) ease of application to the head in any position, (6) extreme simplicity of lock mechanism, (7) preservation of the advantages of the classical obstetric forceps.

For the management of the asynclitic head in occipito-transverse positions, the anterior blade is first reversed, inserted posterior to the head and rotated around the occiput to take up its correct position. The posterior blade is then inserted directly and will be found to lie much lower in the pelvis than the anterior blade. Firm pressure on the fundus by an assistant drives the head more deeply into the pelvis and allows the blades to become exactly parallel. The lock is then accurately closed and traction applied safely.

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## INTRALOBAR PULMONARY SEQUESTRATION WITH ANOMALOUS PULMONARY VESSELS

According to Gebauer and Mason (*Dis. Chest.*, 35: 282, 1959), "intrapulmonary sequestration" is the result of pathological processes rather than the effect of a congenitally anomalous pulmonary vessel. This applies to practically all the cases reported in the literature as congenital anomalies. They find the diagnosis confused with bronchiectasis, cystic disease, and accessory and aberrant lung anomalies. They emphasize that the arterial system of the mediastinum, particularly the bronchial arteries, is capable of astounding changes in response to severe, prolonged bronchopulmonary infections, especially those occurring early in life and accompanied by some degree of pulmonary artery obstruction. Finally, they call attention to the absence of this condition in thousands of autopsies of the newborn.

Consideration of these facts, along with evidence from cases reviewed, suggests that it might be better to abandon the term "intralobar pulmonary sequestration" than to continue its loose usage.

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## AN ONTARIO SURVEY OF MULTIPLE SCLEROSIS

A number of surveys of the incidence of multiple sclerosis in various parts of Britain have been made, and it has been suggested that areas occur with a high inci-

*(Continued on page 58)*

MEDICAL NEWS *in brief*

*(Continued from page 57)*

dence of this disease. Such a finding if confirmed would be of great importance, and White and Wheelan of Kingston, Ontario (*Neurology*, 9: 256, 1959), undertook a survey of an area in Ontario with a 60-mile radius centred on Kingston. Altogether 474 patients with multiple sclerosis were discovered, and a final list of 68 patients was studied in depth. Details of the study are reported, and it is stated that no evidence was found for the existence of areas of high prevalence, except in Kingston itself, and even there errors of sampling are suggested.

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## VARIATIONS IN TOTAL SERUM CHOLESTEROL LEVELS

Total serum cholesterol level may vary widely in any given individual. The use of such measurements is of some value in the treatment of hypercholesteræmia, but the limitations imposed by this variability must by taken into consideration. According to Thompson (*Am. J. M. Sc.*, 237: 319, 1959), a minimum of four or five determinations done on the same day of the week (to minimize dietary variations, if any) should be sufficient to indicate the patient's range of variability. Once this variation is established, more accurate judgment as to the efficacy of treatment may be made.

Based on these data, depressions of more than 20% of the mean pre-treatment values (up to 400 mg. per 100 ml. of blood) or of more than 50 mg. per 100 ml. total serum cholesterol may be taken to indicate successful depression of the serum cholesterol level if the depressed levels continue. This may not apply to cases of marked hypercholesteræmia.

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## BRONCHOPULMONARY GEOTRICHOSIS

Four cases of bronchopulmonary geotrichosis, proved by repeated cultures of sputa, bronchial aspirates and Geotrichum cutaneous tests, are reported by Webster (*Dis. Chest*, 35: 273, 1959). One was a case of Geotrichum bronchitis of three years' duration, followed by simultaneous appearance of pulmonary tuberculosis lasting for six years. One case of Geotrichum bronchitis was superimposed upon pulmonary emphysema. The concurrent demonstration of *Geotrichum candidum* and Friedländer's bacillus was noted in a case of pneumonia of the right upper lobe. Finally, a primary, patchy infiltration and cavitation due to *G. candidum* in the left upper lobe and an accompanying septicæmia were diagnosed in the fourth case. Treatment with iodides was successful in Geotrichum bronchitis and produced gradual roentgenographic and clinical improvement in the case of pulmonary geotrichosis with cavitation and septicæmia.

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## POSTGRADUATE COURSE, WOMAN'S HOSPITAL, NEW YORK

The Woman's Hospital Division of St. Luke's Hospital, New York City, will offer a one-week course from October 8 to 14, 1959, in "The Conduct of Labour and Delivery". This is for general practitioners

*(Continued on page 60)*

MEDICAL NEWS *in brief*

*(Continued from page 58)*

and a thirty hours' Category I Credit is allowed by the American Academy of General Practice. The course will consist of lectures, demonstrations, work in the prenatal and postpartum clinics and assistance in the delivery room. The number of registrations will be limited. For further information write to Mr. Carl P. Wright, Jr., Director, Woman's Hospital, 141 West 109th Street, New York, N.Y. Registration will close on September 15, 1959.

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## ULCER OF THE ŒSOPHAGUS

Solitary callous ulcer of the œsophagus is rare, but Rudström and Drettner of Uppsala, Sweden (*Acta chir. scandinav.*, 116: 186, 1959) have collected eight cases operated upon. In every case the ulcer was in the distal half of the œsophagus, and the patients were aged between 37 and 75 years. The chief symptom was recurrent and extremely severe retrosternal pain at the level of the lesion, combined with burning and a feeling of obstruction to passage of food. Later, dysphagia predominated and the patient lost much weight. In one case severe hæmorrhage was probably due to the ulcer. X-ray examination was the most valuable diagnostic aid, the differential diagnosis being from carcinoma. However, findings at operation were often very characteristic; œsophagitis around the ulcer distinguished the condition from malignant disease. At operation, the cardia was resected as well as the fundus and most of the body of the stomach, and an anastomosis formed between œsophagus and anterior wall of the gastric stump. Results were favourable on follow-up over a period of one to seven years.

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## INTRAPLEURAL PNEUMOTHORAX AND PNEUMOPERITONEUM IN TUBERCULOSIS

To clarify the present situation of pneumothorax in the treatment of pulmonary tuberculosis, Zorini and his colleagues (*Dis. Chest*, 35: 242, 1959) analyzed 1762 cases treated by this method between 1935 and 1953, and followed up for at least two years after the treatment was discontinued.

Before the advent of antituberculosis drugs, in 1935-46, the mortality rate was 26% with recovery in 62.5% and complications in 29.6% (of which 9.9% were empyemas). More recently, with the use of drugs, deaths decreased to 5.3%, recoveries increased to 91.4%, and complications fell to 8.6% (of which 3.8% were empyemas.

Compared with recent data on 3840 patients treated by pulmonary resection and antituberculosis drugs, mortality and recovery rates were about the same as those with pneumothorax. Pleural complications were higher for the operated patients (18%).

Pulmonary function has been less impaired since the introduction of chemotherapy. Among the patients in this study, good pulmonary function followed treatment in 30.5% (1935-40), 41% (1941-1946) and 84% (1947-53). The authors feel that intrapleural pneumothorax combined with antituberculosis drugs has a good position today in the treatment of pul-

monary tuberculosis. They also consider that pneumoperitoneum has good possibilities as a complementary method in the medical and surgical treatment of pulmonary tuberculosis, but that it gives results clearly inferior to those obtained with pneumothorax.

## PAN AMERICAN ZOONOSES CENTER

On April 25, the Pan American Sanitary Bureau officially inaugurated its Pan American Zoonoses Center in Azul, Argentina—an institution dedicated exclusively to studying the diseases transmitted between animals and man. Recognition of the effect of the zoonoses on the health and economy of the hemisphere led to the signing in 1956 of an agreement between the Argentine government and the Pan American Health Organization providing for establishment of the Center and selection of Azul, 185 miles south of Buenos Aires, as the site. Dr. Benjamin Blood is director of the Center, which is administered by the Bureau and financed by the Pan American Health Organization and by technical assistance funds from UN/WHO and the OAS.

## LOBELINE AS A SMOKING DETERRENT

Lobeline sulfate in a buffered vehicle consisting of tricalcium phosphate and magnesium carbonate is absorbed from the human gastro-intestinal tract readily and consistently. The blood lobeline level established with the lobeline preparations is directly related to the effectiveness of this agent in curbing smoking. The effective level in the blood seems to be around 100 to 140 $\mu$g. lobeline per 100 ml. blood. A subject wishing to stop smoking can do so, or at least cut down materially the number of cigarettes smoked per day, as well as the amount of each cigarette smoked, with the aid of this formula. A subject not wishing to stop smoking might not cut down the number of cigarettes smoked per day, since that is determined in part by pure physical habit patterns and social custom. However, he will cut down the amount of each cigarette smoked, when using this formula. Such a subject apparently puts most of the cigarettes out much sooner than he ordinarily would.

A count only of the number of cigarettes smoked per day, therefore, does not seem to be a valid criterion in evaluating the effectiveness of a regimen designed to aid in curbing the smoking habit. G. W. Rapp *et al.*: *Am. J. M. Sc.*, 237: 287, 1959.

## INTERNATIONAL CANCER CYTOLOGY CONFERENCE

An International Cancer Cytology Conference, sponsored by the Instituto de Oncologia and the Ministry of Health, Madrid, the International Union Against Cancer, and the Pan American Cancer Cytology Society, will be held in Madrid, September 22-26, 1960. The President of the Conference is Dr. J. Sanz Ibanez, Director of the Madrid National Cancer Institute, and Vice-Presidents are Dr. J. Ernest Ayre, Miami, Florida; Dr. E. V. Cowdry of St. Louis, Missouri; and Dr. J. H. Maisin, Louvain, Bel-

*(Continued on page 62)*

## MEDICAL NEWS ~~in brief~~

*(Continued from page 61)*

gium. Dr. Angel Valle Jimenez has been appointed Secretary General and Dr. H. deWatteville of Geneva, Switzerland, is General Program Chairman. Representing Canada on the Advisory Council are Dr. Jean Darche and Dr. W. B. Ayre. The conference will focus attention on cytology research and advanced methods of cancer control through early cytological diagnosis. A brochure is available for distribution to medical and scientific groups setting forth more details in connection with this forthcoming international medical event.

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### THE MAN WITH MULTIPLE SPEECH CENTRES

A 94-year-old lumberman who had lived for many decades in a German-speaking environment in Austria sustained a right-sided hemiplegia due to embolism in the left cerebral hemisphere. When his speech recovered, he was found to be totally unable to speak German but to be speaking fairly clear Slovenian, a speech which he had not used since the age of 30. He was illiterate and had spoken Slovenian until he was inducted into the Austrian army at the age of 30, after which he spoke practically nothing but German. Reporting this case, Gorlitzer von Mundy (*Wien. med. Wchnschr.* 109: 358, 1959) suggests that since the patient was ambidextrous in his youth he had developed two speech centres for Slovenian; when he entered the army, he was drilled in right-handedness and developed an additional German centre on the left side which was wiped out by his embolism, together with one of his two Slovenian speech centres.

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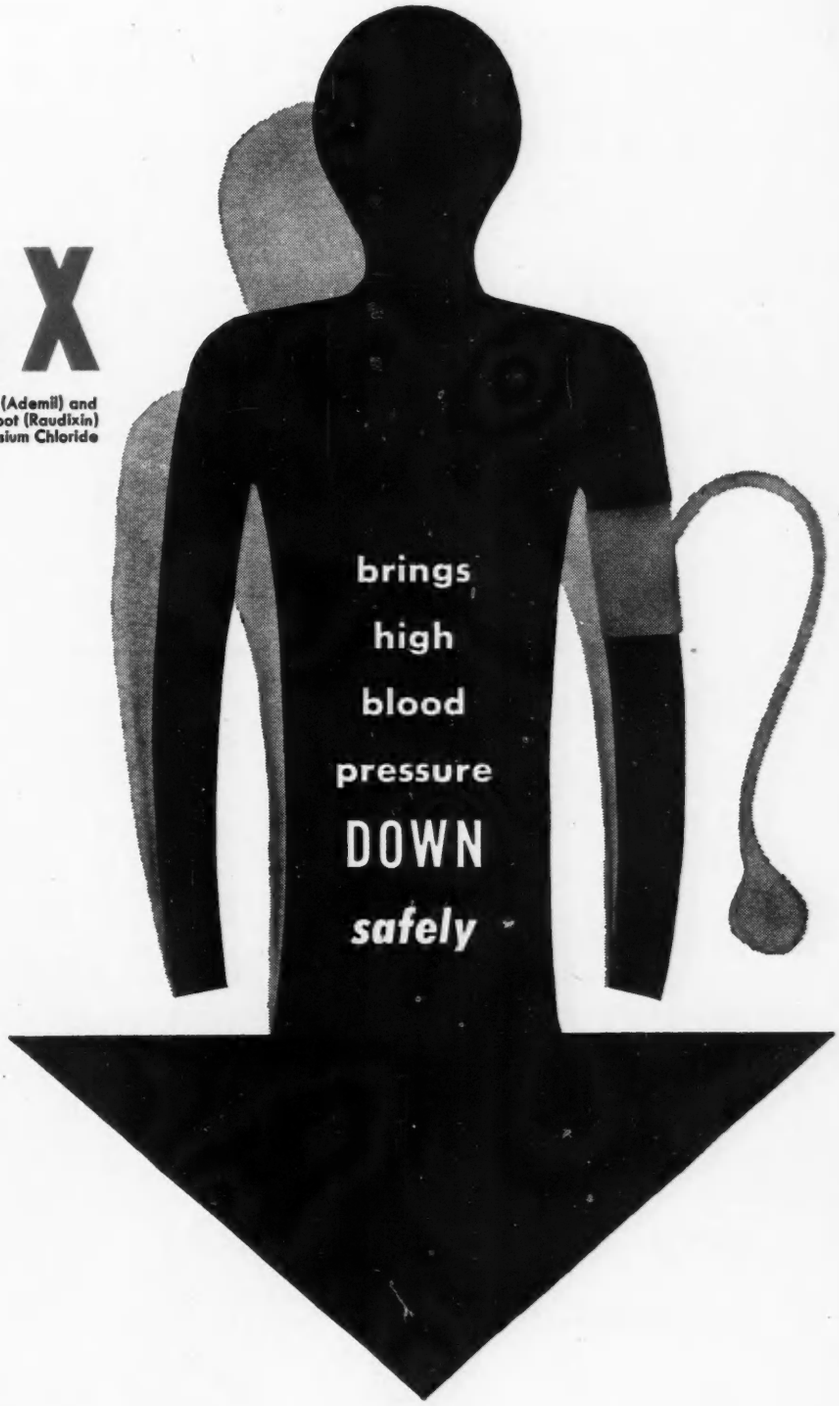
### THE ŒSOPHAGUS

Volume II, No. 3, of the *CIBA Clinical Symposia* consists of three articles on the œsophagus. In the first, Woodward surveys diseases of the œsophagus, pointing out how often the signs and symptoms of œsophageal dysfunction are misunderstood because the outstanding symptom, dysphagia, often does not appear until late in the course of serious disease. He notes that

*(Continued on page 64)*

# RAUTRAX

Squibb Flumethiazide (Ademil) and
Rauwolfia Serpentina Whole Root (Raudixin)
with Potassium Chloride




**Provides enhanced control of the neurogenic and physico-chemical factors involved in hypertension through the conjugate action of . . .**

**ADEMIL — the diuretic-antihypertensive agent with the least kaliuretic action**

**RAUDIXIN — the neuro-antihypertensive agent described as the "rauwolfia preparation of choice"[1]**

**Supplied:** Capsule-shaped tablets containing 400 mg. Ademil (Squibb Flumethiazide), 50 mg. Raudixin (Squibb Rauwolfia Serpentina Whole Root), and 400 mg. Potassium Chloride. Available in bottles of 100 tablets.

SQUIBB

*A Century of Experience Builds Faith*

1. Moyer, J.H. and Blem, J.: Am. J. Cardio. 3:199 (Feb.) 1959.

MEDICAL NEWS *in brief*

*(Continued from page 62)*

roentgenography is the most important diagnostic measure, and that œsophagoscopy is far more hazardous than bronchoscopy and contraindicated in cases of aortic aneurysm and recent ulceration due to corrosives. Carcinoma, the commonest tumour in the œsophagus, has been seen by the author in a patient as young as 25 years, and is commoner in men than in women by 5 to 1. Its onset is insidious, dysphagia being generally indicative of far advanced lesions. Any adult who has persistent difficulty in swallowing must be considered a cancer suspect until proved otherwise.

Zaino and Poppel give an account of recent work on the anatomy and physiology of the lower œsophagus in the second article, describing their oil contrast technique by means of which five component structures can be detected in the lower œsophagus: (1) the phrenic ampulla, (2) the inferior œsophageal sphincter, (3) the gastro-œsophageal vestibule, (4) the constrictor cardia, (5) the phreno-œsophageal membrane.

Miller in the third article describes the first stages of swallowing as followed-up by high-speed cineradiography with speeds of 1/30 to 1/60 second.

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## DIAGNOSTIC CHANGES IN THE VOICE IN MYXŒDEMA

Almost all authors who have written about myxœdema in elderly persons stress the alterations in the voice that may occur with development of the disease, but few stress its diagnostic value. Lloyd, who works in a geriatric unit in England (*Brit. M. J.*, 1: 1208, 1959), draws attention to the important diagnostic significance of such change in voice. In his hospital practice during the previous 15 months he has seen 22 cases of myxœdema and in 5 of these the voice change was the only striking sign of the condition.

He groups changes in the voice into: (1) Alterations in quality. The pitch becomes lower and there is an increased catarrhal quality together with a "clotted" quality such as would be obtained if a large quantity of chocolate was held and dissolved slowly in the mouth; the voice is also husky and harsh. (2) Alteration in diction. The patient has difficulty in articulation, and the speed of diction varies between the very slow and deliberate and the rapid and slurred. Slurring involves a group of words rather than a single word. Singers who develop myxœdema complain of their inability to continue singing. Serial voice recordings might take their place beside serial BMR readings and photographs as diagnostic aids in doubtful cases.

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## CANADIAN LIFE INSURANCE OFFICERS ASSOCIATION GRANTS AND FELLOWSHIPS

The Canadian Life Insurance Officers Association reports that, through its Public Health Committee, the life insurance companies doing business in Canada are making grants and awarding fellowships for public health projects and medical research amounting to more than $100,000 this year. These grants are in addition to those made by individual com-

panies for miscellaneous educational and charitable purposes.

In the public health field three of the eight grants are renewals from previous years and the other five are new this year. One of the major grants is to Dalhousie University to support a cardio-pulmonary unit at the University's medical school.

The Canadian Highway Safety Conference is to receive financial aid for its program to reduce highway accidents in Canada. A further grant is made to the Health League of Canada to assist the League in sending the magazine "Health" to general practitioners throughout Canada. Another grant is given to the Ontario Society on Ageing to support its program.

In the field of medical research, grants are being made to the Medical School of Queen's University, Hôtel-Dieu Hospital at Montreal and the Montreal General Hospital. Queen's University is to receive its grant for a study of anoxia, in the Department of Physiology under the direction of Dr. J. D. Hatcher. The Hôtel-Dieu Hospital's research, to be conducted under the direction of Dr. Paul Stanley, concerns the fate of synthetic material transplanted into arteries in dogs.

Dr. Michael Kaye of the Montreal General Hospital will conduct research on renal disease.

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## MUSCLE WEAKNESS AND FLUORINATED STEROIDS

The side effects noted with the earlier corticosteroids are not usually observed with triamcinoline, but on the other hand there are reports of muscle weakness, headache, drowsiness, and progressive loss of weight. Williams reports three such cases from Hammersmith Hospital (London, Eng.). A 56-year-old man with polyarteritis nodosa who had been maintained on steroids for some years developed heaviness and weakness of the legs within three weeks of being put on triamcinolone. The weakness progressed until prednisolone was substituted for triamcinolone, when there was steady improvement in muscle power. A 37-year-old housewife was on cortisone because of asthma, and although she had been aware of slight weakness of the leg and trunk muscles for some time, this became very much more marked within a week of starting triamcinolone. Since then she had difficulty in holding herself upright and fell down many times; her appetite was poor and she lost a great deal of weight. There was general wasting of limb muscles, and weakness in flexors and extensors of the hips and the extensors of the knees. Within two weeks of changing back to triamcinolone, there was a definite increase in muscle power, although no change in the wasting was noticed. A 62-year-old man on steroid treatment for scleroderma was fairly well controlled until he was changed to triamcinolone. Within a month his arms and legs became much weaker and he soon needed two sticks for walking. However, his weight remained stationary and his appetite good. Because of the presence of subacute combined degeneration of the cord, it was difficult to assess any change in muscle power after he was put back on prednisolone.

In the same issue of *Lancet*, MacLean and Schurr report a case of muscular paralysis after fludro-

*(Continued on page 66)*

MEDICAL NEWS *in brief*

*(Continued from page 65)*

cortisone therapy which improved dramatically upon withdrawal of this agent and its replacement by cortisone. Williams points out that there was electromyographic evidence of a primary muscle-fibre lesion and that there were no differences in protein-catabolic activity between triamcinolone and prednisolone in the doses used. He also reports that muscle biopsy was done in two of his patients and this showed widespread muscle damage. MacLean and Schurr suggest that this muscular weakness may be due to fluorine, since both triamcinolone and fludrocortisone contain fluorine in the molecule. —*Lancet*, 1: 698 and 701, 1959.

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## MYALGIC ENCEPHALOMYELITIS

From Durban (South Africa) and from Athens (Greece) come reports of an outbreak of disease resembling poliomyelitis (*Lancet*, 1: 689 and 693, 1959). The Durban outbreak occurred in a training school for nurses and struck suddenly in February 1955, affecting 59 nurses in one week. The total number reached 98, and at first these were thought to be atypical cases of poliomyelitis. Hill, Cheetham and Wallace report the 98 cases and discuss their clinical features, referring also to cases reported elsewhere. The ages of the affected patients ranged between 17 and 49, but the majority were under 25 years of age, and although several of the nurses who contracted the disease were nursing in children's wards no child was known to have become ill.

Four distinct phases of the disease were observed and are described. The prodromal phase consisted of occipital headache lasting for up to two weeks and accompanied by sore throat, burning eyes, coryza, nausea or vomiting, and severe backache. Patients believed themselves to be suffering from influenza or some respiratory infection. This was followed by the onset of the acute phase, often dramatic, with sudden weakness and the feeling of heaviness in one or more limbs. The severe occipital headaches were now accompanied by neck muscle rigidity, and there was weakness and inability to sit up unaided. Paræsthesiæ or severe pains in the affected limbs were common.

The convalescent phase was very short in some cases, but in most patients some symptoms were observed as long as three months later. Eleven patients were still disabled after three years and are considered to be in the chronic phase. One has a permanent foot-drop, two others have complete paralysis of one leg, and two partial paralysis of an arm. Still others have weakness in both legs and one or other arm, severe back weakness with paralysis of a leg, or generalized weakness of an arm, back and one leg. No appreciable muscle wasting is associated with these weaknesses. Initially, a toxic agent was believed to be responsible for the outbreak but no evidence could be found to support this belief. The true etiology remains a mystery, although an infective agent is suspected.

Daikos *et al.* report a similar epidemic at the school for midwives in Athens in June 1958. Twenty-five of the patients were graduates or student midwives, and of the remaining two one was a nurse and

*(Continued on page 68)*

# ORINASE*

*tolbutamide*

# is even safer than salicylates!

Therapeutically, a euglycemic agent and an analgesic are obviously dissimilar in the extreme. We selected acetylsalicylic acid (A.S.A.) as a basis of comparison simply because it is so widely used and so highly regarded. The purpose of this comparison is not to disparage the unquestioned value of A.S.A. in medicine, but rather to dramatize the remarkable safety of Orinase.

Insofar as safety is concerned, a recent survey[1] confirmed the fact that Orinase's remarkable freedom from toxicity makes it almost unique among drugs of therapeutic importance. Among 9,168 patients, there was not a single instance of serious toxic reaction, and the total incidence of side effects (including even those not traceable to Orinase, plus those of insufficient severity to necessitate cessation of therapy) was only *3.2 per cent.*

Even the ubiquitous A.S.A. cannot match this safety record. The lowest incidence of side effects from A.S.A. reported in the last 5 years, based on an exhaustive survey of the literature, was *5 per cent.* And even this incidence occurred among some 300 people representing an average cross section of the community, without reference to their prevoius medical history.[2]

In short, the *maximum* incidence of side effects with Orinase is less than the *minimum* incidence of side effects with A.S.A., on dosage levels in the 1 to 1.5 gram range. In other words, even *if* A.S.A. possessed euglycemic activity equivalent to that of Orinase (which it of course does not), Orinase would *still* be the drug of choice, because of its greater safety.

1. O'Donovan, C. J.: Third International Congress Diabetes Federation (July 21-24) 1958.
2. Muir, A., and Cossar, I. A.: Brit. M.J. *11*:7-12 (July 2) 1955

*REGISTERED TRADEMARK

HOECHST PHARMACEUTICALS OF CANADA LIMITED • MONTREAL, QUEBEC

MEDICAL NEWS *in brief*

*(Continued from page 66)*

the other a servant at the outpatient clinic. The main symptoms were muscle pains, subjective sensory disturbances, headache, muscular contractions, pyrexia and loss of appetite. Neck stiffness and photophobia occurred in four patients and double vision in two. The most frequent signs were tenderness of the periosteum and tendon sheaths, abnormal tendon reflexes, sensory disturbances and equivocal plantar responses. Paresis was present in 12 of the 27 patients. In this epidemic, more than half of the patients were discharged within a month after admission and were able to resume work after a short sick leave. The more severely affected patients had several relapses during convalescence and had a peculiar limp, due partly to quadriceps weakness and partly to painful sensation in the knees or soles of the feet. The eventual outcome was good in all cases. No therapeutic measure proved effective for palliation. Cortisone was tried without any effect. Although no viral or bacterial agent was isolated in this epidemic, the authors believe that it is of infectious (probably viral) etiology. It is of interest that the epidemic affected only females, practically all of them nurses.

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## SOCIAL FACTORS IN THE OUTCOME OF MENTAL ILLNESS

As there are no well-established etiological theories to explain the major functional psychoses, an epidemiological inquiry might be expected to provide some useful information. Two major difficulties in such an inquiry are the multiplicity of possible factors in each patient's social environment, and the relative infrequency of psychosis if we consider only the first attack. Carstairs (*Proc. Roy. Soc. Med.*, 52: 279, 1959) reports a study in which the fate of 240 psychotic men was followed up for one year after their discharge from mental hospital. It was found that, in addition to the patient's clinical condition at time of discharge, the most important factors in the subsequent outcome were success in finding employment and the type of household he lived in after leaving hospital.

Investigations showed – somewhat to the surprise of the investigators – that the outcome was worse for those who went to their parents' home, was somewhat better for those who lived with their wives or with other kin, and best for those who rented a room from a landlady. In this series there was a small group of mothers of schizophrenics who were oversolicitous or dominating towards their sons, but this was not always associated with early relapse. It appeared that the patient's reaction to this type of mothering was an important associated factor. It was impossible to decide whether the mother's behaviour had preceded the first onset of the patient's illness or had developed because of it. The present findings support the view that a certain measure of disengagement of too close personal ties is better for schizophrenics who live in a community. The findings do not support the harmful consequences ascribed by others to "social isolation". The need is stressed for confirmatory studies of these findings before using them for practical recommendations.